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ABSTRACT

As a replacement to the 1970 version, reports of aviation-aerospace educational programs as of March, 1971, for 67 high schools and 6 community colleges of California, are included in this 1972 status report. Following a statement of the rationale and a discussion of the historical development, detailed descriptions are given for most institutions in connection with their student enrollments, course study, and program activities. The educational programs focus on aeronautical science, career education, industrial arts, interdisciplinary approach, military aerospace science, mechanical vocational education, and pilot and preflight. In some programs, the objectives are to prepare for the Federal Aviation Administration certificates. It is pointed out that an advisory committee is essential in carrying out such a statewide program. An overall list of California community colleges offering aviation education programs is also provided. Included in the appendices are excerpts from Education Code, a description of the aviation education survey, a list of high schools for which liability insurance is provided, and sources of information and assistance. (CC)

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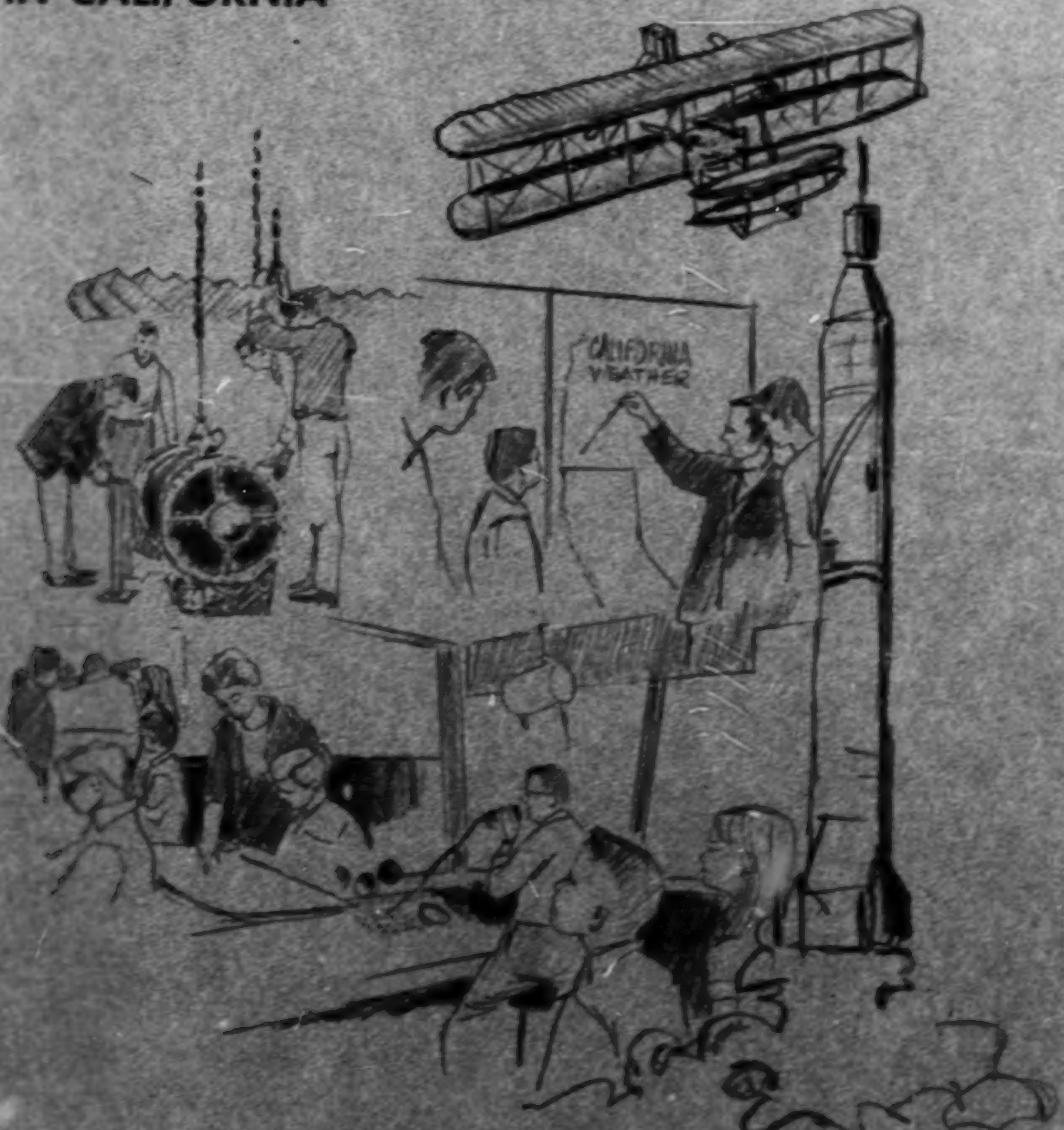
A STATUS REPORT OF AVIATION AND AEROSPACE EDUCATION IN CALIFORNIA



CALIFORNIA STATE DEPARTMENT OF EDUCATION
Wilson Riles — Superintendent of Public Instruction

666

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A STATUS REPORT OF AVIATION AND AEROSPACE EDUCATION IN CALIFORNIA

Prepared for the

Bureau of Elementary and Secondary Education
Division of Instruction

By W. EARL SAMS
Consultant in Secondary Education

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FOREWORD

The demand for better trained and better educated personnel in every aspect of air transportation today gives justifiable impetus to those schools and colleges that are evaluating existing programs or designing new ones.

Our statewide advisory committee and the Governor's Aerospace Education Task Force have recommended studies in all categories of aviation and aerospace education to determine the needs for education and for training. Both groups have recognized the need for relevant integration of basic elements of science and mathematics in aviation-aerospace curriculum and the potentialities of such studies in basic skill programs.

The California schools and colleges which are close to the 167 airports being used for pilot training have the advantage of a working model of an aviation-aerospace education laboratory. I believe that an adequate program of aviation-aerospace education in California will (1) help the youth of this state discover how to use aircraft effectively; (2) help youth prepare for careers in aviation and space science; (3) assist communities in the development of facilities needed for a comprehensive air transportation system; and (4) help schools discover how to utilize the interest of youth in aviation and space operations.

We are grateful to all California public schools and colleges which have cooperated in helping us produce this resume of the course offerings in aviation, aeronautical science, and the aerospace sciences. The publication will serve as a guide for those schools and colleges that are planning new programs or attempting to strengthen existing ones.

Wilson Riles

Superintendent of Public Instruction

Dr. Wilson Riles, California Superintendent of Public Instruction, extends a Certificate of Appreciation to Congressman Don H. Clausen for his support of aerospace education and congratulates him for having had the foresight to help the schools of Crescent City establish an aviation education program in 1951 that has helped many youths find careers in air transportation and general aviation.

PREFACE

This publication is a report of the status of aviation and aerospace education in the schools and colleges of California. However, since the California community colleges are no longer under the jurisdiction of the State Board of Education, only representative course descriptions for community colleges are included. This report contains summaries of 67 high school and six community college programs of aviation-aerospace education. Resources that can provide detailed information about all of the aviation and aerospace instruction in California are identified in this document.

Aviation education in California has experienced many successes and many failures.

Since the inception of aviation education in 1946, the statewide effort has been toward identifying the historical developments in the field. Some aviation instruction was offered in a Los Angeles high school in 1919, but it was the San Francisco School District that started a high school program in aviation education in 1939 that has continued. Many high schools established sound aviation programs in 1946. Palo Alto is one that has persisted, while many other districts have temporarily abandoned the aviation course. Reedly College reported the earliest known program in the 1920s; and during the 1930s, Sacramento City College and the College of San Mateo began instruction in aeronautics.

The interest of students in aviation, rocketry, and space exploration has resulted in some specialized courses designed to prepare students for careers in those fields. This publication contains brief reports of many such programs.

Aviation and aerospace study lends itself naturally to interdisciplinary project-oriented courses. Coordinated programs in grades ten through fourteen are finding greater acceptance in the districts of the state. Direct contact with industry, through advisory committees, and constant curriculum modernization are essential for a current up-to-date aviation curriculum.

Sources for textbooks and other instructional materials and reference to current California Education Code provisions are included in the Appendix. The names of some members of the former advisory committee to the Superintendent of Public Instruction have been included, although the committee has been officially disbanded. The listing includes only those people who have registered a willingness to provide continued service and counsel.

THOMAS A SHELLHAMMER
Deputy Superintendent for Programs

MITCHELL L. VOYDAT, Chief
Bureau of Elementary and
Secondary Education

SPECIAL RECOGNITION

Special recognition for extensive service and promotional efforts in behalf of aviation and aerospace education in California are due:

1. Congressman Don H. Clausen for having initiated the program in Del Norte High School, Crescent City, in 1951, continuing his national efforts to help schools discover the educational potentialities in such a program preparing our youth to meet the jet-space-nuclear challenges and opportunities.
2. Bertrand Rhine, Attorney, former Wing Commander of Civil Air Patrol, for the CAP-sponsored legislation in 1945 which forced the State Department of Education to help school districts establish and maintain such programs and for his continued effort to promote general aviation as an educational resource.
3. L. W. Hunt, President, and Harry Noblitt, Vice President, of Airflite, Inc., for their unprecedented support of the state's aviation education efforts, beginning in 1946.
4. Stewart Angle, Chairman, Aviation Department, Mt. San Antonio College, for his persistent efforts to extend aviation and air transportation education to men and women students seeking careers in the industry and for introducing California to the versatility of air transportation as a flying classroom.
5. William D. Hecht, United Air Lines (retired), for making the educational services of UAL available to schools and colleges for 25 years and for his persistent support of the California Aviation Education Association after retirement.
6. Eugene Kropf of the Federal Aviation Administration for his untiring support of California's aviation education endeavors.
7. Thomas Leonard, Chairman, Department of Aeronautics, San Jose State College, for accomplishing the impossible in the development of one state college aviation and aerospace education airport department against seemingly insurmountable odds.
8. Ted G. Misenhimer, Instructor, Redondo High School, for developing and maintaining a model aviation and aeronautical science high school program which has been the inspiration for hundreds of school administrators and teachers throughout the nation.

* * * * * * * *

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RATIONALE FOR AVIATION-AEROSPACE EDUCATION

Among the many reasons for an aviation-aerospace educational program, three rate prime consideration at the high school level. (1) Many high schools have increased their holding power over potential dropouts with aviation aerospace educational programs. (2) Many airports are good educational laboratories. (3) Career opportunities in general aviation (aircraft design, construction and operation), air transportation, and aerospace industries are revealed by such instruction.

Other good reasons for such programs are that (1) there is a continuing need for more and better educated and trained individuals in most aspects of aviation, air transportation, aeronautics, and aerospace operations; (2) the lives of the pilot and his passengers are completely dependent upon his training, integrity, attitude, and capability; and (3) many dads--and teachers--have discovered that basic flight instruction of a son or daughter can be a powerful "generation gap" reducer.

In this account, we have included 67 high schools and six colleges that have reported they offered aviation programs as of March, 1971. We have identified some schools that lost their instructor and have only temporarily eliminated the program. (Attention: prospective aviation educators!) Most of the schools and colleges with aviation education programs are within five miles of an airport (one rural high school built its own bordering the campus). Most of them use live aircraft in their operations. The names of persons to be contacted for additional operational information are included.

Details regarding unique aviation course offerings are included because of the many requests from educators contemplating a new program. Requests for information are also received from air transport personnel, aircraft manufacturers, and governmental agencies responsible for aviation safety. As of January, 1972, we had requests from 39 community colleges and 288 high schools in California for current aviation education information. It is probable that approximately 200 schools and colleges are offering ground school courses for pilots in regular and adult education programs throughout the state. No attempt is made at this time to list all of those programs. (See Survey Results in Appendix for Federal Aviation Administration testing and career education information.)

Some of the most frequently asked questions and answers include the following:

1. How many schools and colleges overcome fear of liability?

   Many California schools and colleges have solved the "fear of liability" problem by obtaining supplementary liability insurance to cover the standard policies. How much liability insurance is adequate depends upon the community and the circumstances. Some colleges, it will be observed from the reports contained herein, consider $500,000 to be adequate (especially when at any one time the lives of only one student and one instructor are subjected to the hazard). Others require as much as $2,000,000 supplemental liability insurance because four-place aircraft are used for the program. (See Survey Results in Appendix regarding insurance.)

2. How have schools covered the costs of the flight programs?

   Some have had support of Rosenberg, Bates, and other foundations. The cost of the aircraft operation and liability insurance coverage, in most cases, is borne indirectly by the students who engage in the flight activities.

whether they use the flight services of a school or college club or take the flight instruction in aircraft provided by a private flight school operator. Some colleges have entered into contracts with one or more flight school operators to guarantee a quality program of flight instruction at nominal cost. Standards of safety and quality that exceed the minimums specified by the Federal Aviation Administration are the result. (FAA suggests that public schools and colleges should have better than minimum standards.)

3. How can we get help setting up a new program or strengthening an ailing one?

The cooperative attitude among most high school and community college aviation educators in California has provided a valuable, continuing source of consultant and advisory service to the schools and colleges. These aviation educators founded the California Aerospace Education Association (CAEA) in 1950 (incorporated in 1954), for the prime purpose of helping each other. Some of the past presidents are: ('67-68) S ewart Angle, Mt. San Antonio College, 1100 North Grand Avenue, Walnut, CA 91789, Tel. (213) 339-7331; ('68-69) Myrl Rupel, Superintendent, Perris Union High School District, 350 East Fourth Street, Perris, CA 92370, Tel. (714) 657-5138; ('69-70) Mrs. June Edwards, Agricultural Aviation Consultant, author, pilot, and Kern County Schools Aviation Education Consultant, 3100 Durwood, Bakersfield, CA 93304, Tel: (805) 832-1756 or 832-3111, ext. 100; and ('70-71) Robert Ring, San Jose State College, 125 South Seventh, San Jose, CA 95114, Tel: (408) 294-6414. The current president is Mrs. Nancy Harker, 550-D East Olive Avenue, Burbank, CA 95114, Tel: (213) 843-5395.

The aims of the CAEA are:

a. To aid in the development and improvement of aerospace curricula in the schools of California

b. To promote closer affiliation between educational institutions and the aerospace industry so that programs of education may better provide for the needs of the industry

c. To promote greater cooperation and interchange of ideas among the teaching and administrative personnel of the schools participating in aerospace education

d. To recognize outstanding students interested in aerospace through the medium of an annual Air Youth Day

e. To encourage younger students in science and mathematics to participate in aviation activities

4. What are the legal provisions for aviation education?

The existing Education Code provisions pertaining to aviation education were worked out cooperatively by Senator Stephen P. Teale and the CAEA. They have been used to provide nominal consultant service from the State Department of Education and are also used by some districts to suggest the coordinated approach to aviation education from the elementary level through the higher level of education in the community colleges. The code provisions are provided for reference in the Appendix.

From the variety of aviation education programs described by the community colleges, it will be observed that a multitude of possibilities are available to any district. For example, the Diablo Valley College, with its approximate enrollment of 168 students last year, had only one teacher, Mrs. Coral Bloom, who did all of the ground instruction and most of the flight instruction as well. The college has made no effort to provide the aviation mechanics program because they have felt other districts were more adequately equipped to fulfill that need. At the other end of the spectrum, we have such programs at the college level with approximately 1,000 students and 15 full-time-equivalent instructors in aeronautics.

The reader is invited to direct questions to the institutions whose aviation programs are listed in this report. However, all who are engaged in the process of developing a new program or strengthening an existing one are urged to become thoroughly familiar with the related materials reported by the high schools and colleges. They should also plan to visit the most representative program to witness it in operation before directing an extensive list of questions to the cooperating institutions. Inasmuch as thousands of hours of research have gone into the development of successful programs, they can best be understood by a personal visit followed by an analysis of the curriculum and operational materials provided.

The increasing interest in flight programs at the community college level has produced a renewed interest in the legal provisions for such programs. Numerous county counsels have been asked for opinions about schools or colleges entering into contracts with local flight schools, the rental or purchase of aircraft for flight instruction, and appropriate methods for collecting and disbursing funds provided by students to cover costs. Some schools and colleges will be utilizing Education Code Section 6321 providing "community service classes" for authorization to establish a flight program for which the district may (Education Code 6324) ". . . charge students not to exceed the cost . . .".

The Orange County Counsel, in their Opinion 67-S103, written by Deputy Laurence M. Watson, P. O. Box 1863, Santa Ana, CA 92702, Tel: (714) 834-3300, have taken the position that a school district may not enter into agreements with privately operated schools to accept for credit coursework completed at one of the privately operated schools by students concurrently enrolled in such private schools and a school operated by the district. The opinion further expresses the belief that a community college may offer a flight training course for credit to its students and may rent or purchase a plane to be used in conducting the course. Mr. Watson and many other counselors have recommended that colleges desiring to offer flight instruction should admit their complicity and purchase adequate liability insurance coverage.

It is interesting to note that newspapers throughout California look forward to annual stories about the aviation programs, achievements of graduates, and plans for the future.

An Advisory Committee is Essential

A statewide Aerospace Education Advisory Committee consisting of 85 education and aviation leaders of California was appointed by the Superintendent of Public Instruction in 1950. It served almost continuously (at no state expense) until it was retired in 1971. Its primary functions were:

1. To identify exemplary high school and community college aviation education programs that can be used as models

2. To learn about obstacles and problems of aviation education in California that have restricted its growth during the past 20 years and to offer suggested solutions
3. To consider proposals of the Federal Aviation Administration and other state and federal organizations and school and college aviation educators of the United States that are applicable to California
4. To review existing and proposed Education Code provisions for aviation-aerospace education
5. To learn about the personnel needs of the aviation-aerospace industry and the educational implications
6. To propose a course of action whenever and wherever a need is seen

One of the principal outcomes of the work with the advisory committee was this status report, in which the various kinds of aviation education programs are described in sufficient detail to permit other schools and colleges to select an appropriate model for the community each serves. A second outcome of the advisory committee has been the production of a new Aeronautical Science Course of Study for high schools of California. Several members of the advisory committee served on the task force that prepared the manuscript, and an editorial committee led by Ted Misenhimer of Redondo High School completed the manuscript* which was released by the Federal Aviation Administration. It is available to high school districts at a nominal cost.

We appreciate the service of the committee for their many years of voluntary effort and are pleased to list those who registered a willingness to serve in an unofficial capacity as a source of information and advice in the future:

Name	Address	Position
1. Adams, Claude	Arvin, CA 93203 Tel: Off. (805) 774-5389	Helicopter Technician and Use Consultant
2. Allen, Duane	1185 Airport Blvd. San Jose, CA 95110 Tel: Off. (408) 297-1414	Owner, Flight Education
3. Allen, Robert E.	2730 Midway Chico, CA 95926 Tel: Off. (916) 343-5896	Doctor of Veterinary Medicine
4. Amerine, Mervin W.	Route 2, Box 783 Oakdale, CA 95361 Tel: Off. (209) 847-3041 Res. (209) 847-2126	President, Amerine Air, Inc.

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*National Aerospace Education Council, 805 15th St., N. W., Washington, D. C. 20005; or
Superintendent of Documents, C.P.O., Washington, D. C., 20402 ($2.25)

5. Andrews, Floyd	3100 Goddard Way San Diego, CA 92101 Tel: Off. (714) 297-4781	President, Pacific Southwest Airlines
6. Angle, Stewart	1100 N. Grand Ave. Walnut, CA 91789 Tel: Off. (213) 339-7331 Res. (714) 622-0555	Chairman, Aeronautics Department, Mount San Antonio College
7. Benefiel, Dru W. (Mrs.)	23041 Maple Ave. Torrance, CA 90505 Tel: Off. (213) 534-0609	Teacher, adult education
8. Bloom, Coral (Mrs.)	321 Golf Club Rd. Concord, CA 94523 Tel: Off. (415) 685-1230 Ext. 260	Chairman, Aeronautics Department, Diablo Valley College
9. Boyer, Clifford M.	995 N. Reed Ave. Reedley, CA 93654 Tel: Off. (209) 638-3641	President, Reedley College
10. Briscoe, Ben	500 S. First Ave. Avenal, CA 93204 Tel: Off: (209) 584-9945	Teacher, Fourth Grade, Reef-Sunset Elementary School
11. Cartwright, Vern W.	Sacramento Exec. Airport Sacramento, CA 95822 Tel: Off. (916) 421-3465	President, Cartwright Aerial Surveys, Inc.
12. Caywood, Grant D.	1435 Alhambra Blvd. Sacramento, CA 95816 Tel: Off. (916) 452-7421	Architect, AIA
13. Clausen, Don H. (Hon.)	1035 House Office Building Washington, D. C. 20515 Tel: Off. (202) 225-3311	Congressman
14. Cody, L. D. "Pat"	USAF - CAP - RLO Hamilton AFB, CA 94934 Tel: Off. (415) 883-7711 Ext. 4201 or 3021	Director, Aerospace Education
15. Cooper, George	Ames Research Center Moffett Field, CA 94035 Tel: Off. (415) 961-1111 Ext. 2210	Chief, Flight Operation

16. Cornell, Wilton	106 S. Main St. Bishop, CA 93514 Tel: Res. (714) 455-2661	Auto Sales, Rental
17. Critchell, Howard M.	1467 Lafayette Rd. Claremont, CA 91711 Tel: Res. (714) 624-2554	Exec. Vice-President, The Bates Foundation for Aeronautical Education
18. Crotti, Joseph R.	Sacramento Exec. Airport Sacramento, CA Tel: Off. (916) 445-2582	Director, California State Department of Aeronautics
19. Dallas, Nicholas	4100 Donald Douglas Dr. Long Beach, CA 90808 Tel: Off. (213) 421-8293	Director of Aeronautics, City of Long Beach
20. Darby, Ray	P. O. Box 189 Redding, CA 96602 Tel: Off. (916) 243-2162	County Superintendent of Schools, Shasta County
21. Debs, Ernest	821 Hall of Administration Los Angeles, CA 90012 Tel: Off. (213) 625-3611	Supervisor, 3rd District, Los Angeles County
22. Donahoe, Mike	204-7 NASA Moffett Field, CA 94035 Tel: Off. (415) 961-1111 Ext. 2450	Chief, Education Programs Office, Ames Research Center
23. Downie, Don	19138 Mauna Loa Ave. Glendora, CA 91740 Tel: Off. (213) 963-1429	President, Downie & Associates
24. Dwiggins, Don	3816 Paseo Hidalgo Malibu, CA 90265 Tel: Off. (213) 456-8700	Writer and Author--Aviation
25. Eberhardt, Robert M.	P. O. Box 1110 Stockton, CA 95201 Tel: Off. (209) 464-8781	President, Bank of Stockton
26. Edwards, June (Mrs.)	3100 Durwood St. Bakersfield, CA 93304 Tel: Off. (805) 832-1756	Director, Farm News, KLYD-TV
27. Evans, Hugh A.	455 Capitol Mall Sacramento, CA 95814 Tel: Off. (916) 446-3431	Attorney-at-Law

28.	Fisher, Howard S.	2465 Calle Almonte Santa Barbara, CA 93105 Tel: Res. (805) 963-5737	Retired
29.	Foy, Lauretta (Mrs.)	15061 Hamlin St. Van Nuys, CA 91401 Tel: Off. (213) 636-2179 Res. (213) 988-1576	Chief Pilot & Flight Instructor, Southland Helicopters, Inc.; Member, Nat'l Women's Advisory Committee on Aviation; Member, President's Aviation Commission
30.	Franklin, Douglas	1380 Bancroft San Leandro, CA 94577 Tel: Off. (415) 483-2233	Aviation Lecturer & Author
31.	Gibbs, William, Jr.	Montgomery Field San Diego, CA 92123 Tel: Off. (714) 277-0310	President, Gibbs Flying Services, Inc.; Bank Air, Inc.; Lease-Air, Inc.
32.	Gorton, Rex	1425 Russ Blvd. San Diego, CA 92101 Tel: Off. (714) 234-8451	President, San Diego City College
33.	Hamilton, Robert M., Jr.	Ontario Internat'l Airport Ontario, CA 91762 Tel: Off. (714) 984-1207 or (714) 684-1287	Airport Manager
34.	Hecht, William D.	1231 Laurence Expwy., SP 336 Sunnyvale, CA 94086 Tel: Off. (408) 734-0261	UAL - Retired; Educational Representative
35.	Huber, Albert J.	Metropolitan Airport 6079 Airport Blvd. Sacramento, CA 95837 Tel: Off. (916) 922-5411	Director, Department of Airports, Sacramento County
36.	Hunt, L. W.	2700 E. Wardlow Rd. P. O. Box 1769 Long Beach,CA 90801 Tel: Off. (213) 426-5966 or (213) 636-0286	President, Airflite, Inc.
37.	Johnson, Robert E.	445 S. Figueroa St. Los Angeles, CA 90012 Tel: Off. (213) 482-3620	Assistant to the Vice-President, Marketing, Southwest Region, United Air Lines

38.	Ketchum, William	1904 Truxtun Ave. Bakersfield, CA 93302; or State Capitol, Rm. 4013 Sacramento, CA 95814 Tel: Off. (804) 323-3146 Sac. (916) 445-7795	Assemblyman, 29th District
39.	Kropf, Eugene S.	P. O. Box 92007 Airport Station Los Angeles, CA 90009 Tel: Off. (213) 670-7030 Ext. 206	Public Affairs Officer, Federal Aviation Administration
40.	Lacerda, Larry	5005 E. Anderson Ave. Fresno, CA 93727 Tel: Off. (209) 251-4231	Service Manager Beechcraft West
41.	Lakin, Marshall	701 S. Mt. Vernon Ave. San Bernardino, CA 92403 Tel: Off. (714) 885-0231	Aeronautics Instructor, San Bernardino Valley College
42.	Leonard, Thomas E.	125 S. 7th San Jose, CA 95114 Tel: Off. (408) 294-6414 Ext. 2481	Chairman, Department of Aeronautics, San Jose State College
43.	Lessinger, Leon	33 Gilmer St., S. E. Atlanta, GA 30303	Calloway Professor of Urban Education Georgia State Univ.
44.	Lisk, Delevan S.	7776 Ivanhoe Ave. La Jolla, CA 92038 Tel: Off. (714) 454-0411 Ext. 306	Director, Special Services, Copley Press, Inc.
45.	Little, H. Gene	125 S. 7th San Jose, CA 95114 Tel: Off. (408) 294-6414 Ext. 2481	Aeronautics Instructor San Jose State Coll.; Vice Chairman, Governor's Aerospace Educ. Task Force
46.	Mark, H. H.	5839 - 22nd St. Rio Linda, CA 95673 Tel: Off. (916) 922-9511	Chief, FAA, McClellan RAPCON
47.	McLaren, David P.	P. O. Box 3307 Terminal Annex, Los Angeles, CA 90054 Tel: Off. (213) 625-8921	Science Supervisor, Los Angeles City School Districts

48. Miller, Scott E.	6201 W. Imperial Hwy. Los Angeles, CA 90045 Tel: Off. (213) 646-2770	AiResearch, Los Angeles International Airport
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50. Misenhimer, T. G.	631 Vincent Park Redondo Beach, CA 90277 Tel: Off. (213) 379-5421 Res. (213) 375-5288	Instructor, Redondo Union High School
51. Muth, Carl R.	398 Vista Rd. Bishop, CA 93514 Tel: Off. (714) 872-7511 or (714) 873-3856	Doctor of Optometry
52. Myers, Donald L.	Palo Alto Airport Palo Alto, CA 94303 Tel. Off. (415) 322-4677	President, Don L. Myers Company
53. Nissen, James M.	1661 Airport Blvd. San Jose, CA 95110 Tel: Off. (408) 292-3141	Airport Manager, San Jose Municipal Airport
54. Noblitt, Harry	2700 E. Wardlow Rd. P. O. Box 1769 Long Beach, CA 90801 Tel: Off. (213) 426-5966	Vice-President, Airflite, Inc.; Cessna Distributor
55. Nystrom, John P. (Jack)	1700 W. Hillsdale Blvd. San Mateo, CA 94402 Tel: Off. (415) 341-6161 Ext. 258	Chairman, Aeronautics Department, College of San Mateo
56. Patterson, John C.	Sacramento Exec. Airport Sacramento, CA 95822 Tel: Off. (916) 428-8292	President, Patterson Aircraft Company
57. Porch, Harriett E.	1700 Main St. Santa Monica, CA 90407 Tel: Off. (213) 393-0411 Res. (213) 451-0231	Editor & Researcher, The Rand Corp.; Professor of Air Transportation, Pepperdine College
58. Portugal, Eugene	1040 Del Norte St. Eureka, CA 95502 Tel: Off. (707) 443-8411	President-Superintendent College of the Redwoods

59.	Power, Edwin I., Jr.	Nut Tree, CA 95688 Tel: Off: (707) 448-7411	Airport Manager
60.	Rhine, Bertrand	80 S. Lake, Suite 711 Pasadena, CA 91101 Tel: Off. (213) 624-0841	Attorney-at-Law; Formerly Wing CO, Civil Air Patrol
61.	Richardson, Ralph	12943 Dewey St. Los Angeles, CA 90066 Tel: Off. (213) 825-3303 Res. (213) 390-4573	Professor, University of California at Los Angeles
62.	Rodgers, George D.	Beech Aircraft Corp. Wichita, KA 67201 Tel: Off. (316) 685-6211	Director, Light Aircraft Marketing
63.	Rupel, Myrl C.	1456 Perris Blvd. Perris, CA 92370 Tel: Off. (714) 657-5138	Superintendent, Perris Union High School District
64.	Sams, W. Earl	721 Capitol Mall Sacramento, CA 95814 Tel: Off. (916) 445-8150	Consultant, Bureau of Elementary and Secondary Education, California State Dept. of Education
65.	Scharch, Ralph W.	P. O. Box 128 Rimrock, AZ 86335 Tel: Off. (606) 567-4571	President, R. W. Scharch Flight Associated Activities
66.	Scharer, Norman	720 Santa Barbara St. Santa Barbara, CA 93102 Tel: Off. (805) 963-4331	Superintendent, Santa Barbara City Schools
67.	Sharp, T. E.	18111 Nordhoff St. Northridge, CA 91324 Tel: Off. (213) 349-1200	Admissions & Records, San Fernando Valley State College
68.	Shire, Glynn	3835 Freeport Blvd. Sacramento, CA 95822 Tel: Off. (916) 444-6960	Associate Dean, Vocational Education Dept., Sacramento City College
69.	Solomon, Edw. W.	Veteran Home Station Yountville, CA 94599 Tel: Off. (707) 224-8311	Director of Personnel, Napa Valley Unified School District
70.	Vai, Anthony	Northrup Institute of Technology Inglewood, CA 90306 Tel: Off. (213) 641-3470	Head of Airframe and Powerplant Maintenance School

71.	Van Emon, Walter C. (Lt Col USAF, Ret)	625 Arthur St. Novato, CA 94947 Tel: Off. (415) 897-4224	Aerospace Education Instructor (CA-11), Novato High School
72.	Wagner, Alfred W.	2615 Eye St. Sacramento, CA 95816 Tel: Off. (916) 441-3411 Res. (916) 489-6519	Medical Doctor

Types of Aerospace Education Programs Offered in California Schools

Seven distinct types of aerospace education programs can be identified by a study of the goals, objectives, course outlines, and descriptions provided by the 67 high schools and six colleges that have been included in this report. All of the high schools and colleges in California since 1946 have been encouraged to design their own programs based upon the goals and objectives they deem appropriate for the needs of their students and the available instructor(s) and resources of the community (e.g., Sacramento County's regional occupational program has many students attending classes in the aviation facility at McClellan Air Force Base; San Diego has some students observing and acquiring new skills in the FAA control tower and communications center; while still other schools are utilizing the local airport next door, with its sod runway, for flight instruction of junior and senior high school students desiring to learn to fly for various reasons). Whatever the level of sophistication the high schools have attempted to achieve, they all acknowledge the success of their programs is based upon their ability to help the learner build upon the basic principles acquired in his studies of English, math, science, and social sciences, and the skills, work habits, attitudes, and respect for work well done acquired in the industrial arts program. In an attempt to make the most of the motivational potential in aviation and aerospace education, some schools have combined many of the basic disciplines into an interdisciplinary approach.

As a guide to different types of programs, we have identified 15 schools with different emphases that permeate the program but are not their exclusive purpose:

Aeronautical Science

	Item
Elk Grove Senior H. S.	28
Redondo H. S.	61

Career Education

Costa Mesa H. S.	16
Mendocino County R O C	40

Industrial Arts

Dixon H. S.	21
Menlo H. S.	41

Interdisciplinary

Aragon H. S.	3
Newport Mesa Unified School District	44

Mechanical Vocational Education (FAA Certificated)

	Item
Anderson Valley Junior-Senior H.S.	2
Palo Alto H. S.	50

Military Aerospace Science

Anderson H. S.	1
Fairfield H. S.	39
Novato H. S.	45

Pilot and Preflight (FAA Certificated)

Del Norte H. S.	20
Lower Lake H. S.	37

The list of California high schools with aviation and aerospace education programs which follows is provided for the use of educators desiring to make contact with those schools and for private and public agencies which produce materials pertaining to aviation, air transportation, and aerospace industries. The instructors of such programs desire current information pertaining to new techniques in design, construction, and operation of aircraft and airports. Both the instructors and the students are constantly searching for new and better methods to help make aircraft of all types more flexible or more versatile and the safest possible form of transportation.

* * * * * * *

CALIFORNIA HIGH SCHOOLS OFFERING AVIATION EDUCATION PROGRAMS
October, 1971

1. *Anderson High School
   Att: Frank Robertson, Supt.
   Lt Col Harold W. Hartel
   USAF (Ret), AEI
   1471 Ferry St.
   Anderson, CA 96007
   Tel: (916) 365-2741

2. Anderson Valley Jr. Sr. High School
   Att: John Merriman, Flight Instr.
   Fritz Gordon, A & P Instr.
   & Inspection Authorization
   P. O. Box 457
   Boonville, CA 94515
   Tel: (707) 895-3496

3. Aragon High School
   Att: Earl Connolley
   Coord., Aerospace Program
   900 Alameda de las Pulgas
   San Mateo, CA 94402
   Tel: (415) 344-1194

4. *Arcadia Senior High School
   Att: Richard W. Cordano, Prin.
   Lt Col George H. Mellin
   USAF (Ret), AEI
   180 Campus Dr.
   Arcadia, CA 91006
   Tel: (213) 446-0131

5. Aviation High School
   Att: Theodore E. Gossard, Prin.
   2025 Manhattan Beach Blvd.
   Redondo Beach, CA 90278
   Tel: (213) 379-5421

6. #Bassett Senior High School
   Att: Mark A. Genera, Prin.
   755 Ardilla Ave.
   La Puente, CA 91746
   Tel: (213) 333-5251

7. Bolsa Grande High School
   Att: Joseph Riedel, Prin.
   9401 Westminster Blvd.
   Garden Grove, CA 92641
   Tel: (714) 638-6424

8. Burbank Senior High School
   Att: Woodrow Nelson
   Aeronautics Instr.
   3500 Florin Rd.
   Sacramento, CA 95823
   Tel: (916) 421-9400

9. Chester High School
   Att: George Cooper, Prin.
   P. O. Box 797
   Chester, CA 96020
   Tel: (916) 258-2126

10. Claremont High School
    Att: Alexander Hughes, Prin.
    Norman Taylor
    Aviation Instr.
    1601 N. Indian Hill Blvd.
    Claremont, CA 91711
    Tel: (714) 624-9041

11. #Clayton Valley High School
    Att: Dan Della, Prin.
    1101 Alberta Way
    Concord, CA 94521
    Tel: (415) 682-7474

12. Cleveland High School
    Att: John Sanders, Prin.
    Fred Ferdon, Instr.
    Aviation, Ind'l Arts
    8140 Van Alden
    Reseda, CA 91335
    Tel: (213) 349-8410

13. *Clovis High School
    Att: Peter G. Mehas, Prin.
    Maj Walter F. Smith
    USAF (Ret), AEI
    5550 N. Fowler Ave.
    Clovis, CA 93612
    Tel: (209) 299-7211

14. #Coalinga High School
    Att: Donald M. Wrinkle, Prin.
    697 Sunset St.
    Coalinga, CA 93210
    Tel: (209) 935-2041

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*Air Force Junior ROTC
#Course not offered in 1971
AEI = Aerospace Education Instructor

15. *Compton High School
Att: Aaron C. Wade, Prin.
Lt Col Sid Newsom
USAF (Ret), AEI
601 S. Acacia St.
Compton, CA 90220
Tel: (213) 636-4321, Ext 257

16. Costa Mesa High School
Att: Robert Perrin, AEI
2650 Fairview Rd.
Costa Mesa, CA 92626
Tel: (714) 545-9431

17. Culver City High School
Att: Edwin L. Church, Jr., Prin.
Calvin Pits, AEI
4401 Elenda St.
Culver City, CA 90230
Tel: (213) 839-4361

18. Davis High School
Att: Gary Giovannoni
Aviation Education Instr.
1200 Rumble Rd.
Modesto, CA 95350
Tel: (805) 725-3851

19. #Delano High School
Att: Norman M. Walters, AEI
1331 Cecil Ave.
Delano, CA 93215
Tel: (805) 725-3851

20. Del Norte High School
Att: George F. Whalen, Prin.
Keith Wise
Aeronautics Instr.
1301 El Dorado St.
Crescent City, CA 95331
Tel: (707) 464-6141

21. Dixon High School
Att: Andrew Yon Kondy, Instr.
Aviation; Industrial Arts
455 East "A" St.
Dixon, CA 95620
Tel: (916) 678-2391

22. *Dominguez High School
Att: Wilbur A. North, Prin.
Lt Col William E. Booth
USAF (Ret), AEI
15301 San Jose Ave.
Compton, CA 90221
Tel: (213) 636-2263

23. Downey High School
Att: A. F. Collie
Aeronautics Instr.
11040 S. Brookshire Ave.
Downey, CA 90241
Tel: (213) 923-6711

24. Downey High School
Att: Robert Deal, Prin.
100 Coffee Rd.
Modesto, CA 95350
Tel: (209) 526-3672

25. Eisenhower High School
Att: Albert J. Keegan, Prin.
1321 N. Lilac Ave.
Rialto, CA 92376
Tel: (714) 875-300

26. *El Dorado High School
Att: Marvin R. Stewart, Prin.
Lt Col Andrew White
USAF (Ret), AEI
1651 N. Valencia Ave.
Placentia, CA 92670
Tel: (714) 524-4374

27. #El Dorado High School
Att: Alvin Fodor, Supt.
550 Canal St.
Placerville, CA 95668
Tel: (916) 622-3634

28. Elk Grove Senior High School
Att: Howard Winter, Chrmn.
Science Dept.; AEI
9800 Elk Grove-Florin Rd.
Elk Grove, CA 95624
Tel: (916) 421-5479

29. *Fairfield High School
Att: Gordon G. Gibson, Prin.
Lt Col Rex W. Floyd
USAF (Ret), AEI
205 E. Atlantic Ave.
Fairfield, CA 94533
Tel: (707) 422-8672

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*Air Force Junior ROTC
#Course not offered in 1971
AEI = Aerospace Education Instructor

30. #Fremont Junior High School
Att: Louis V. Montoya
Industrial Arts Teacher
3173 Kerry St.
San Bernardino, CA 92405
Tel: (714) 887-2511
(Program moved with teacher to Serrano Jr. High School)

31. Fresno High School
Att: Richard Champion
Aviation Instr.
1839 Echo Ave.
Fresno, CA 93704
Tel: (209) 222-4851

32. Granada High School
Att: Jack P. Lee, Prin.
Calvin Boyd,
Aviation Instr.
400 Wall St.
Livermore, CA 94550
Tel: (415) 443-1122

33. #Granada Hills High School
Att: Bryce E. Schurr, Prin.
Lyle Jensen, Instr.
10535 Zelzah Ave.
Granada Hills, CA 91344
Tel: (213) 360-2361

34. Hoover High School
Att: William Murphy, Prin.
George Novinger, Instr.
Aerospace Science
651 Glenwood Rd.
Glendale, CA 91202
Tel: (213) 242-6801

35. Jordan Senior High School
Att: John Morton, Instr.
6500 Atlantic Ave.
Long Beach, CA 90805
Tel: (213) 423-1471

36. #Kennedy High School
Att: Robert J. Mullen
Coord., Special Projects
1108 Bissell Ave.
Richmond, CA 94802
Tel: (415) 234-3825
(See Richmond Unif. S. D.)

37. Lower Lake High School
Att: Donald N. Prosser
Aviation Instr.
P. O. Box 507
Lower Lake, CA 95457
Tel: (707) 994-6195

38. Manual Arts High School
Att: Josephine Spearman, Prin.
4131 S. Vermont Ave.
Los Angeles, CA 90037
Tel: (213) 232-1121

39. Marysville High School
Att: Miss Lesta Joubert, Prin.
Lt Col A. S. C. Chong,
USAF (Ret), AEI
18th and B Streets
Marysville, CA 95901
Tel: (916) 743-6541

40. Mendocino County
Regional Occupation Center
Att: Philip E. Nickerman
Dir., Vocational Education
Courthouse
Ukiah, CA 95482
Tel: (707) 462-1720

41. Menlo Atherton High School
Att: Jean L. LaLanne
Chrmn., Industrial Arts
Middlefield and Ringwood
Atherton, CA 94025
Tel: (415) 369-1412

42. Monterey Peninsula Unified
School District
Att: Allan J. Peterdorf, Supt.
P. O. Box 1031
Monterey, CA 93940
Tel: (408) 649-7414

43. Moreno Valley High School
Att: Gareth B. Goddard, Prin.
Maj Marvin Odle
USAF (Ret), AEI
23300 Cottonwood Ave.
Sunnymead, CA 92388
Tel: (714) 653-3156

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*Air Force Junior ROTC
#Course not offered in 1971
AEI = Aerospace Education Instructor

44. Newport Mesa Unified School District
Att: Mrs. Fay Harbison, Dir.
Space Science Learning Program
1601 Sixteenth St.
Newport Beach, CA 92660
Tel: (714) 645-0600

45. *Novato High School
Att: Stanley Onderdonk, Prin.
Col Walter Van Emon
USAF (Ret), AEI
625 Arthur St.
Novato, CA 94947
Tel: (415) 897-4224

46. Oakdale High School
Att: Robert C. Scherer, Prin.
739 West "G" St.
Oakdale, CA 95361
Tel: (209) 847-3007

47. #Oakmont High School
Att: Kenneth Sahl, Prin.
1710 Cirby Way
Roseville, CA 95678
Tel: (916) 782-3781

48. O'Connell Vocational High School
Att: Bryant Lane, Prin.
135 Van Ness Ave.
San Francisco, CA 94102
Tel: (415) 863-4680

49. Palm Springs High School
Att: Dennis LeRoy Anderson
Principal Ground Instr.
2248 E. Ramon Rd.
Palm Springs, CA 92262

50. Palo Alto High School
Att: Maynard Brown
Aeronautics Instr.
50 Embarcadero Rd.
Palo Alto, CA 94301
Tel: (415) 327-7100

51. Perris Union High School District
Att: Myrl C. Rupel, Supt.
1456 N. Perris Blvd.
Perris, CA 92370
Tel: (714) 657-5138

52. Pleasant Hill High School
Att: Lyle Palmer
Aviation Instr.
3100 Oak Park Blvd.
Pleasant Hill, CA 94523
Tel: (415) 934-6746

53. Plumas Unified School District
Att: Floyd E. Warren
Secondary Consultant
P. O. Box 330
Quincy, CA 95971
Tel: (916) 283-2200

54. #Point Loma High School
Att: George S. Parry, Prin.
2335 Chatsworth Blvd.
San Diego, CA 92106
Tel: (714) 223-3121

55. #Ponderosa High School
Att: William Ceccarelli, Prin.
Ponderosa Rd.
Shingle Springs, CA 95682
Tel: (916) 622-5590

56. #Porterville High School
Att: Robert T. Shaner, Prin.
465 W. Olive Ave.
Porterville, CA 93257
Tel: (209) 784-7000

57. Portola High School
Att: Glynn B. Lee, Prin.
P. O. Box 1175
Portola, CA 96122
Tel: (916) 832-4284

58. Quincy High School
Att: Charles D. Farris
Aviation Instr.
P. O. Box D
Quincy, CA 95971
Tel: (916) 283-0200

59. Ravenswood High School
Att: Mrs. Joan Doyle
Aeronautics Instr.
2050 Cooley Ave.
East Palo Alto, CA 94304
Tel: (415) 369-1412

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*Air Force Junior ROTC
#Course not offered in 1971
AEI = Aerospace Education Instructor

60. Redlands Senior High School
Att: Kenneth R. McClellan
Science Department
840 E. Citrus Ave.
Redlands, CA 92373
Tel: (714) 793-2251

61. Redondo High School
Att: Charles Morris, Prin.
Ted G. Misenhimer
Aviation Educator
631 Vincent Park
Redondo Beach, CA 90277
Tel: (213) 379-5421

- REGIONAL OCCUPATION CENTERS
(R O C or R O P)
See: Mendocino County
Sacramento County
San Mateo County

62. Richmond Unified School District
Att: Robert J. Mullen
Coord. of Special Projects
1108 Bissell Ave.
Richmond, CA 94802
Tel: (415) 234-3825

63. Sacramento County
Regional Occupational Program
Att: David Montague, Dir., R O P
and Vocational Education
John D. Sellers, Chrmn.
Aviation Dept.
6011 Folsom Blvd.
Sacramento, CA 95819
Tel: (916) 454-5258

64. San Antonio High School
Att: Norman Taylor, Prin.
Donald Patterson
Aviation Instr.
545 Colby Cir.
Claremont, CA 91711
Tel: (714) 624-9041

65. San Bernardino City Schools
Att: V. V. Knisely
Asst. Supt.-Instr.
Anson Thompson
Cons., Industrial Arts
799 F St.
San Bernardino, CA 92410
Tel: (714) 885-4431

66. San Mateo County
Regional Training Program
Att: Lee M. Baxter, Dir.
Jim Smith, Instr.
703 Bradford St.
Redwood City, CA 94063
Tel: (415) 369-1441, Ext 25

67. Santa Rosa High School
Att: Allan Morgan
Aeronautics Instr.
1235 Mendocino Ave.
Santa Rosa, CA 95401
Tel: (707) 528-5291

68. Seaside High School
Att: Robert DeWeese
Asst. Prin.-Curric.
Warren Hintz
Aviation Instr.
P. O. Box 1031
Monterey, CA 93940
Tel: (408) 649-7011

69. #Selma High School
Att: Gordon L. Axford, Prin.
3125 Wright Ave.
Selma, CA 93662
Tel: (209) 896-1420

70. Serrano Junior High School
Att: Louis V. Montoya, AEI
3131 Piedmont Dr.
San Bernardino, CA 92346
Tel: (714) 862-0230

71. #Sierra Jt. Union H. S. District
Att: Clifford Frantz, Supt.
3326 N. Lodge Rd.
Tollhouse, CA 93667
Tel: (209) 855-2218

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*Air Force Junior ROTC
#Course not offered in 1971
AEI = Aerospace Education Instructor

72. *Stagg High School
Att: Maj Edward Schutzman
USAF (Ret), AEI
1621 Brookside Rd.
Stockton, CA 92507
Tel: (209) 466-3911

73. Tahoe-Truckee High School
Att: J. Donald Marks, Prin.
James VanValkenberg, Instr.
Aeronautical Science
P. O. Box 458
Truckee, CA 95734
Tel: (916) 587-3574

74. Tehachapi High School
Att: Ralph Hickman, Supt.
400 S. Snyder
Tehachapi, CA 93561
Tel: (805) 822-4461

75. Tulare High School
Att: Stanley H. Manroe, AEI
755 E. Tulare St.
Tulare, CA 93274
Tel: (209) 686-4761

76. *Valencia High School
Att: David P. Tansey, Prin.
500 N. Bradford Ave.
Placentia, CA 92670
Tel: (714) 524-4316

77. Verdugo Hills High School
Att: Gerald Presnall, Chrmn.
Mathematics Dept.; and
Aeronautics Instr.
10625 Plainview Ave.
Tujunga, CA 91042
Tel: (213) 353-1171

78. Vista High School
Att: Robert Workman
Teacher, Basic Aviation
200 Michigan Ave.
Vista, CA 92083
Tel: (714) 726-5611

79. Washington High School
Att: Calvin Barnhart
Aviation Instr.
600 - 32nd Ave.
San Francisco, CA 94121
Tel: (415) 387-0550

80. Wilson High School
Att: Herbert Egelko, Chrmn.
Science Dept.
William Wardle, Instr.
Aviation Science
4400 East 10th St.
Long Beach, CA 90804
Tel: (213) 433-0481

81. Woodland High School
Att: William Robertson, Instr.
Aeronautical Science
21 N. West St.
Woodland, CA 95695
Tel: (916) 662-4678

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*Air Force Junior ROTC
#Course not offered in 1971
AEI = Aerospace Education Instructor

DESCRIPTIONS OF HIGH SCHOOL AEROSPACE AND AVIATION EDUCATION PROGRAMS

The following descriptions of high school aerospace or aviation education programs provide enough detail about a variety of approaches to serve as a guide for others. It will be noted that some high schools offer only a very general program, others make a science elective out of the course with many laboratory experiences, others emphasize flight instruction and the related classroom preparation, and still others stress the preparation of youth for the Federal Aviation Administration examinations.

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ANDERSON HIGH SCHOOL
Anderson Union High School District
Attention: Frank Robertson
District Superintendent
Lt Col Harold W. Hartel, USAF (Ret)
Aerospace Education Instructor
1471 Ferry St.
Anderson, California 96007
Telephone: (916) 365-2741

Program Began: 1968

Current Enrollment: 64

Many California high schools have incorporated the Air Force Junior ROTC program into their aerospace education efforts. The description appearing for Anderson High School is characteristic of all Air Force Junior ROTC programs. Cost per student at Anderson in 1970-71 was $172.32.

The aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities, including career opportunities in both civil and military establishments and other worthy academic and character objectives. Academic in nature, the program is designed to make students aware of the responsibility and opportunities for leadership in the aerospace age. The students will be guided to an understanding of the challenges ahead and will be given an opportunity to demonstrate the professional qualities necessary for solving aerospace problems. (For further information about the Air Force Junior ROTC, write to Maxwell Air Force Base, Alabama 36112.)

Prerequisites

1. Fourteen years of age, an American citizen, and/or qualified as a 9th, 10th, 11th, or 12th grade student; male or female
2. Able to participate in the school physical education program and in good academic standing

Objectives

1. To promote habits of orderliness and precision and to develop respect for constituted authority
2. To promote patriotism
3. To encourage a high degree of personal honor, self-reliance, and discipline
4. To provide education for civil defense
5. To provide a means for students to become better informed citizens on matters of national defense and the challenges of aerospace

Aerospace Education (Air Force Junior ROTC) Course Content

Aerospace Education I. Introduction and initial exploration of aerospace matters, including an overview of the development and impact of aerospace; a familiarization with aircraft and spacecraft and examination of the environment in which such craft operate, including meteorological data; an orientation to the work of the United States Air Force; and the teaching of the customs and courtesies used by its military members by example and practice within the unit organization.

Aerospace Education II. Continuation in study of selected areas of aeronautics; examination of the component factors of aerospace power flight, systems and propulsion to include familiarity with types and functions of aerospace vehicles and principles of operation; appreciation of vocational, educational and leadership opportunities in the military services and civil aerospace agencies; and basic skills which will permit participation in, and leadership of, military ceremonies, courtesies and traditions, including patriotic commitment to the responsibilities of American citizenship and fuller respect for constituted authority.

Aerospace Education III. Continuation in examination of space technology and exploration programs; semitechnical study of propulsion systems, guidance and control systems, human factors and physiological aspects of manned and unmanned space flight and exploration, international space programs and achievements; a review of leadership opportunities in space, national defense, and aerospace preparation, including analysis of factors and techniques of problem solving and skills to improve ability to instruct others and to obtain experience in leadership situations and positions in preparation for both civilian and government careers in aviation and related aerospace fields.

Prerequisites: Students, male or female, 14 to 18 years of age, physically qualified to participate in the school's physical education program. (This course cannot substitute for physical education.) Completion of the first level (AE-I) is not a mandatory prerequisite to the second level (AE-II), nor the first two levels to the third level (AE-III). However, completion of a lower level is desirable before enrollment in a higher level. If a level is omitted, prior approval of the aerospace instructor is required. Normally, 10th graders are enrolled in AE-I, 11th graders in AE-II, and 12th graders in AE-III. Other considerations: This course, if all three years are completed, will satisfy the high school science requirement of 10 units from the elective list of science courses required in grades 10 through 12. Each year completed of aerospace science also carries 10 units of elective credit (total of 30) creditable toward college level Air Force, Army, or Navy ROTC which in turn permits waiver of the freshman level in the four-year program, or permits enlistment in any military service at the E-2 pay grade with one-stripe rank. However, this course, in itself, does not satisfy the national military obligation. Although a uniform is issued to each student, for one-day-a-week wearing, "pure" military training is limited to approximately 10-20 percent of the total 180 periods covered in each year's program of instruction. The student interested in this program should be average or better in scholastic achievement; the type intrigued by speed, action, and excitement; attracted to participation in team efforts and in playing new roles; interested in self-discipline, good citizenship, and character development; and capable of increased insight into educational and occupational aspirations in the aerospace fields.

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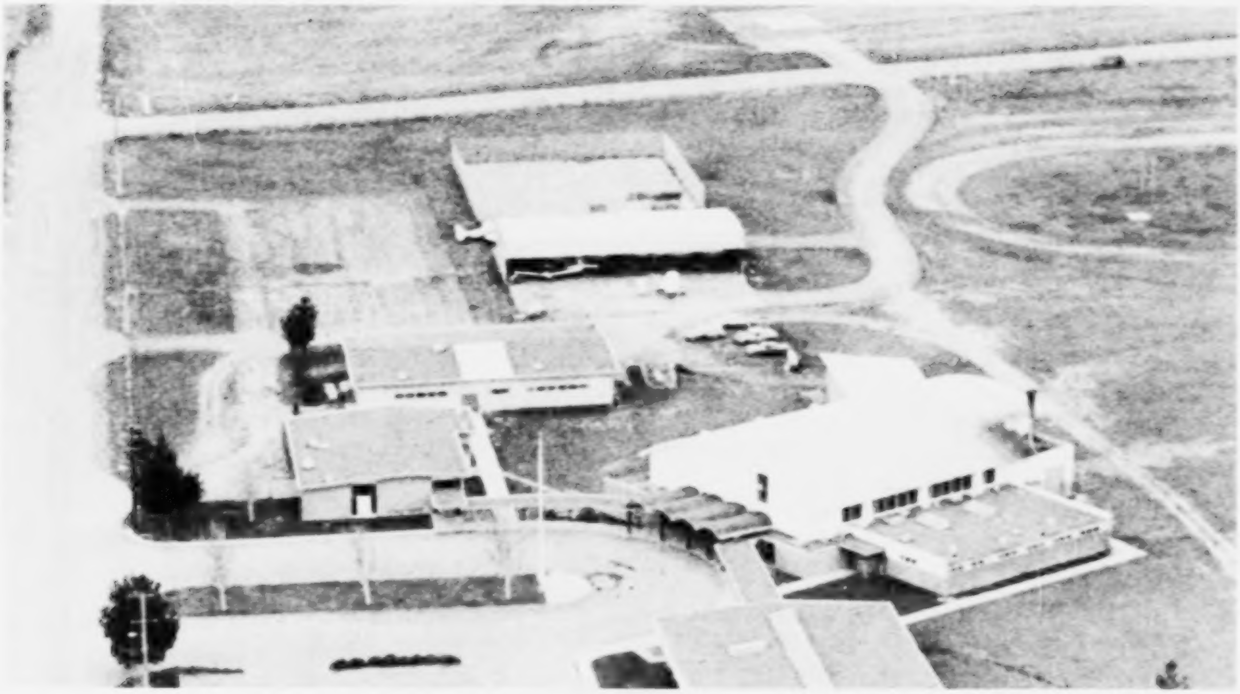

Anderson Valley High School includes the usual school facilities plus a hangar and runway (30).

Anderson Valley High School District Superintendent Mel Baker and Harry Noblitt (advisor) talk with girl members of the aviation class.

ANDERSON VALLEY HIGH SCHOOL
Anderson Valley Unified School District
Attention: John Merriman, Aviation Instructor
Fritz Gordon, A & P Instructor;
and Inspection Authorization
P. O. Box 457
Boonville, California 94515
Telephone: (707) 895-3496

Program Began: 1967

Current Enrollment: Flight, 26; Ground School, 27; Aeromechanics, 38; Celestial Navigation, 9; Airframe, 15; Powerplant, 25

Although the student body numbers only 150, over 20 percent are engaged in a flight program. The aviation education program was designed to fulfill "the need for future occupations and training" in various aviation occupations, with emphasis upon pilot and aircraft mechanics. The high school is providing a vocational training course in airframe and powerplant mechanics. The course is designed to help students gain a full mechanical understanding of aircraft components and powerplants in accordance with FAA specifications. Interested citizens have donated a total of $4,300 in support of the flight program.

The vocational courses developed for either the mechanic's or pilot's license will take three years at two hours a day, or two years at three hours a day, for completion of the commercial program. It is designed to provide each student with a minimum of 240 hours of lecture and 730 hours of practical skill development. If the student chooses to take only one hour a day for two years, he must continue his education through adult education or junior college in order to gain his minimum hourly experience necessary for the FAA certificate. The pattern used for the mechanic's course is represented by the contents of Airframe and Powerplant Mechanics Manual, by Charles A. Zweng, 23rd revised edition, 1968, pages 12 through 17. The school built its own 5,000 square foot hangar on its grounds.

The flight course is a combination of dual and solo flight totaling 30 lessons, each representing a unit of training important to an aircraft pilot. A minimum time of 40 hours dual and solo is required for the private pilot's license. The school also offers a course in celestial navigation, with nine students using USAF navigation courses obtained via surplus. The school owns a Cessna 150 and an Aeronca Chief.

Plans for the immediate future include the installation of a Unicom on the airfield that will be manned by students on a part-time basis. The school also has a C45 (or Beech 18) from state surplus which will be flyable. The plan includes a program that will keep the twin-engined Beech in an operable condition to permit its use for orientation flights and cross-country. It is expected that this will provide experiences for both the airplane maintenance classes and flight students. The school also purchased a wrecked light plane, an Aeronca Chief, thathas been rebuilt and is now used in the flight program.

Objectives of the program are (1) to prepare for the FAA private and commercial flight certificates; (2) to become acquainted with the many facets of aviation and the aerospace industry; (3) to give the "nondirectional" students a chance to find themselves and to succeed in a field of study in which they may be interested; and (4) to give the aero engineer-minded students a broad view of the aviation field.

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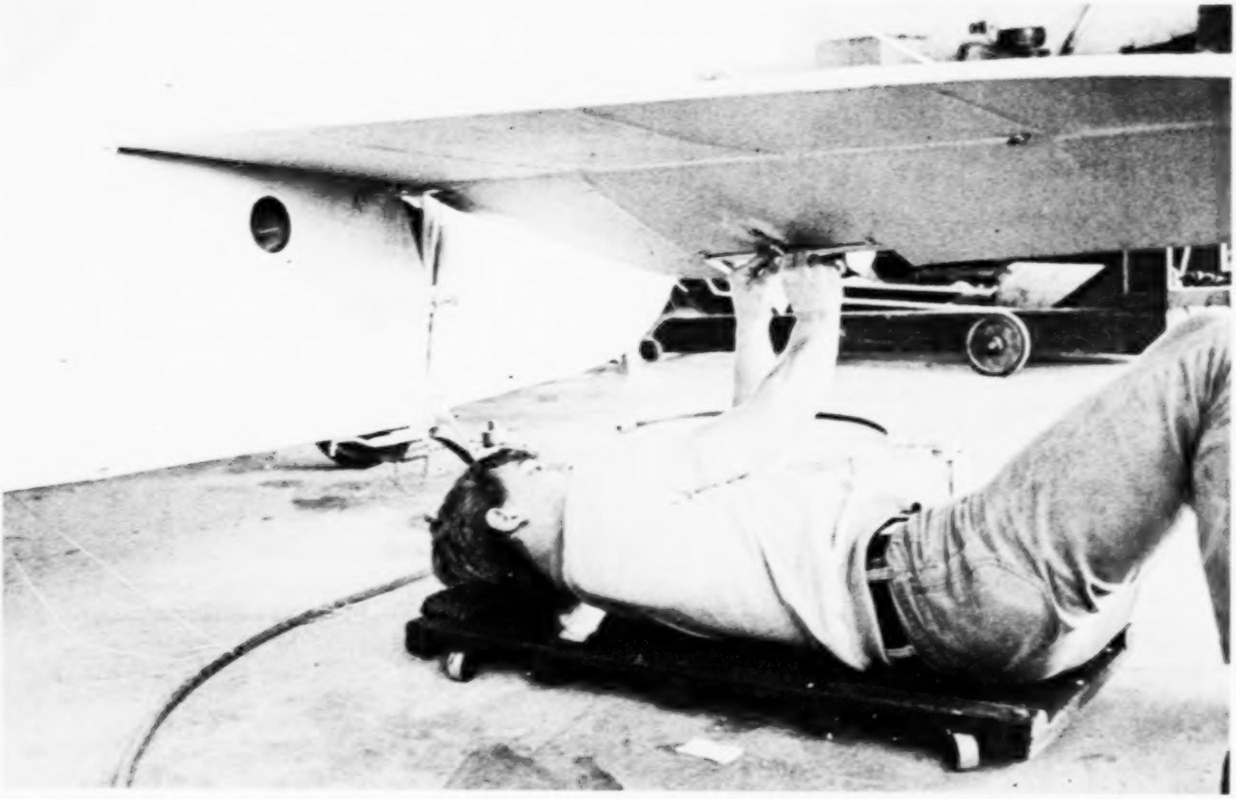


Rebuilding a 1939 Aeronca Chief from a "basket case" was a recently completed project in the Airframe and Engine (A & E) class at Anderson Valley High School. Students work under the direction of Instructor Lawrence X. Johnson, a licensed mechanic who also teaches other high school subjects.

The aviation students at Anderson Valley High School preflight their planes thoroughly before take off.

ARAGON HIGH SCHOOL
San Mateo Union High School District
Attention: Earl Connolley
Coordinator, Aerospace Program
900 Alameda de Las Pulgas
San Mateo, California 94402
Telephone: (415) 344-1194

Program Began: 1966

Current Enrollment: 60

In San Mateo County, one out of every eight employed persons is somehow connected with aviation. As with all industry, the aerospace economy is suffering. Even with economic problems, United Air Lines and American Airlines are building large additions at the San Francisco International Airport, and large air busses (superjets) are there. The job opportunities in the aviation industry (ranging from $6,500 to $55,000 per year) will be open to those best qualified.

The Aragon Aerospace Program offers the opportunity to start career training in an industry that not only is growing rapidly but also offers innumerable benefits to its employees--good pay, health insurance plans, and inexpensive travel opportunities throughout the world. If a career in aviation--ranging from passenger handling, line maintenance, and air freight handling to engineering and piloting--appeals to the student, NOW is the time to do something about it.

Aragon offers an aerospace program designed to meet the needs of anyone interested in aviation--from the high school graduate looking for a job to the college student envisaging two, four, or more years of college study. Of the many students who have completed Aragon's Aerospace Program during the past three years, more than two-thirds are now attending the College of San Mateo or San Jose State College where they are taking aviation courses. Some will continue their education at four-year colleges and universities; others will go directly to jobs at the airport; still others will pursue their interests in the military.

Since Aragon's program extends over two years, the student as a sophomore should make his commitment. The teachers in the program--Mr. Connolley, Mr. Huffman, Mr. Ikuma, and Mr. Mast--will be happy to discuss the content and activities of the program with prospective students. Prospective students are urged to inquire TODAY about tomorrow's aerospace opportunities.

Aragon Aerospace Program
Specific Information about Course Content and Activities

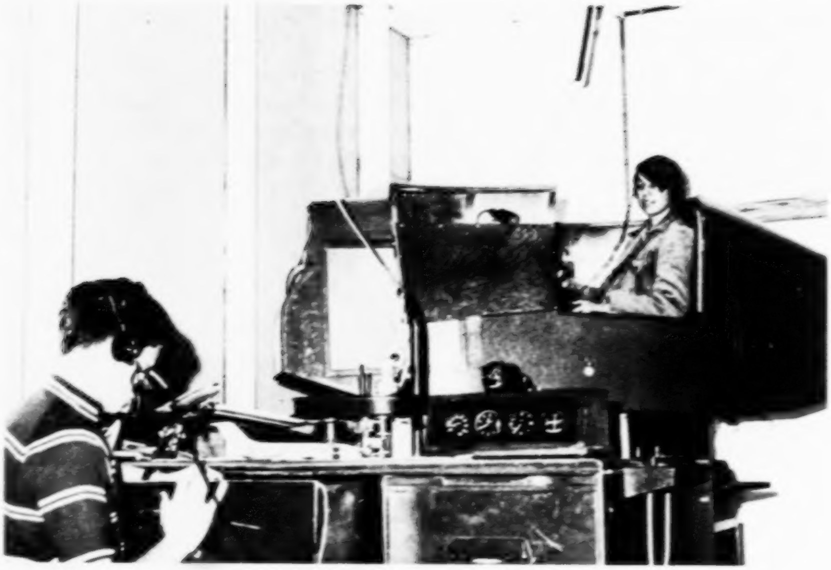
The Aerospace Program is a two-year junior and senior elective program for boys and girls using the study of aviation and space as the focus of study. It involves:

(1) An interdisciplinary approach (an immediate application of learning) in science, aero lab, preflight, English, and mathematics

(2) A vocational emphasis, particularly in aero lab and preflight

(3) The preparation in aerospace and science of both the students who are planning to continue their education beyond high school and those who are making high school their terminal study

A student in the "control tower" guides a "pilot" at the controls of the flight simulator, a Link Trainer donated to Aragon High School by World Airways and used in the school's aerospace program.



A student straddles the fuselage to apply a plug patch.

Aero Science 1-2
Prerequisite: Junior year

Aero Science 1-2 is a modified physics course closely related to Aero Lab 1-2 and Preflight 1-2. Considerable time is spent doing laboratory experiments and projects associated with aerospace, the focal point of the course. The following units are taught: measurement, properties of materials, properties of air, airfoil testing, properties of fluids, mechanics, and an introductory solar and stellar astronomy.

Aero Science 3-4
Prerequisite: Aero Science 1-2

This course is a continuation of Aero Science 1-2. During the second year the principal units are heat and heat engines, sound, light, electricity and magnetism, electronics, and introduction to atomic physics. Through permission of the instructor, credit can be given for Physics 1-2 by taking Aero Science 1-4.

Aero Lab 1-2
Prerequisite: Junior year

This is a basic course in airplane structures, hydraulics, instruments, and equipment. The student receives experience and acquires practical aviation shop skills, such as sheet metal fabrication, as well as building and troubleshooting aircraft systems. Course content includes shop machines, riveting, structures, welding, airfoil testing, hydraulic components and hydraulic systems, bend allowance, and weight and balance.

Aero Lab 3-4
Prerequisite: Aero Lab 1-2

This course is a continuation of Aero Lab 1-2; the course content includes powerplants (engine accessories, fuels and lubricants, engine overhaul, and troubleshooting), basic electricity and electronics, and aircraft electrical and electronic systems.

Preflight 1-2
Prerequisite: Junior year

This course is an integral part of the Aerospace Program, correlating closely with the Aero Science and Aero Lab courses. Upon completion of this two-year course, a student should be qualified to pass his Federal Aviation Administration regulations examination as a requirement for getting his private pilot's license. Instruction is given in principles of flight, weather, navigation, flight instruments, aircraft performance, radio communications, flight planning, and rules and regulations.

Preflight 3-4
Prerequisite: Preflight 1-2

See Preflight 1-2 for a general description of this course. Specific instruction this year is given in the history of aviation, turbine and internal combustion engines, aircraft operation, supersonic aerodynamics, weather services, radio navigation, instrument flight, flight computer, and the space program, including its history and a description of some of its hardware.

Business Communications 1-2
(See BUSINESS DEPARTMENT COURSE CATALOG.)

The junior year of the Aragon High School program requires registration in the following courses:

Course	Units/Year	Modular Configuration per Week Lecture	 Discussion	 Laboratory
Aero Science	10	3		8
Aero Lab	10	3		12
Preflight	5		6	
Business Communications	10	12		
Mathematics	10	12		

Field Trips

Innumerable resources in the Bay Area enable students to take field trips to the following places: United Air Lines Maintenance Base and Service Center; Pan American World Airways Service Center and Training Center; American Air Lines Freight Handling Facility; the San Francisco International Airport Terminal Dispatcher Offices, Planning Centers, and Tower; the Palo Alto and San Carlos general airports; the U. S. Geological Survey Center; the Stanford Linear Accelerator Center; the air traffic control center in Fremont; the NASA facilities at Ames Research Center; U. S. Coast Guard station; and both the College of San Mateo and San Jose State College, which have excellent facilities for continuing aerospace education.

Aero Lab Facilities

In the Aero Lab at Aragon, there are facilities for studying and working on activities in aircraft structures, hydraulics, instruments, powerplants, electrical systems and electronic systems. Recently the school received the gift of a Link Trainor which provides simulated flight conditions.

Flying Phase

A student may become involved in a flying phase of the course at Palo Alto Airport. This part of his training is entirely optional and is arranged directly with Nystrom Aviation at the Palo Alto Airport.

Through the Aerospace Program we try to do the following:

(1) Meet a vocational or avocational interest of students.
(2) Prepare students in technical subjects for college.
(3) Provide a more meaningful and interesting approach to study and education through the interdisciplinary study of aviation and space.

SUBJECT OFFERINGS - 1971-72

AEROSPACE DEPARTMENT

The following courses comprise the two-year curriculum for the Aerospace Program at Aragon High School. The students must enroll in Aero Science, Aero Lab, Preflight, Business Communications, and Aero Math in the junior year unless an appropriate substitution is made after consultation with the teaching team. In the senior year, the student is required to take Aero Science, Aero Lab, and Preflight. Continued enrollment in a math course and an English course is strongly recommended.

Aero Math 1-2
Prerequisite:

This course is designed to prepare the student for effective use of the mathematics required in Aero Science, lab, and Preflight. It includes the principles of algebra, geometry, trigonometry, use of the slide rule, plus basic math needed to operate in those areas.

The following course is not part of the two-year aerospace program. It is offered as an elective in the Aerospace Department and is a one-year course offered for 10 units of credit.

Introduction to Aerospace

This one-year course is an introduction to the aerospace field. It includes units in the history of aviation, basic aeronautics, federal air regulations, meteorology, navigation, role of airports, governmental agencies, studies of careers associated with aviation/space occupations, man in space, and the aviation industry. Its primary purpose is to acquaint students with the field of aerospace. For many students it has served as a preliminary course for the two-year aerospace programs.

Lecture classes meet six mods per week. In addition to the lecture portion, a lab for eight mods per week has been added to make this a 10-unit course. This lab is a course in the basic science for aerospace vehicles. Students will receive practical learning experiences in the preview and nature of air craft structures, design, instruments, systems, pilot maintenance, and ground facilities, in addition to experiments in basic science concepts.

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ARCADIA HIGH SCHOOL
Arcadia Unified School District
Attention: Richard W. Cordano, Principal
Lt Col George H. Mellin, USAF (Ret)
Aerospace Education Instructor
180 Campus Dr.
Arcadia, California 91006
Telephone: (213) 446-0131

Program Began: 1967

Current Enrollment: 32

The Arcadia High School's aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities, including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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AVIATION HIGH SCHOOL
South Bay Union High School District
Attention: Theodore E. Gossard, Principal
2025 Manhattan Beach Blvd.
Redondo Beach, California 90278
Telephone: (213) 379-5421

Program Began: 1964

Current Enrollment: 28

Aero science at Aviation High School is a one-semester course patterned after ground school designed to acquaint the student with the many facets of aviation. The following subjects are covered:

1. Basic aeronautics; theories of flight, forces during flight, aircraft structure, reciprocating engines, propellers, jet and rocket motors, airplane control and stability, instruments, and helicopters
2. The pilot and his responsibilities; Federal Aviation Administration: rules of the air; physiology of flight; student, private, commercial, aircraft, and powerplant licenses
3. Meteorology: observing the weather, forecasting, deciphering coded government reports, and radio-VHF
4. Navigation: chart reading, plotting a course, use of computers, dead reckoning, and radio navigation
5. History of aviation: military, commercial, international, and private
6. Local, national, and international aviation; airports; jobs in aviation, airline transportation, and civil and military aviation

Equipment

1. Aircraft instruments--the basics needed for airplane control are demonstrated
2. Radio-VHF receiver for weather, airway, and aircraft tower communications
3. Wind tunnel--demonstrates the Bernoulli Theory
4. Model airplanes--show different designs and equipment

Aero science projects include constructing a model airplane or space vehicle; developing a display of photographs; constructing a model illustrating theories of flight; artistic or graphic representations of aircraft and weather; a scrapbook of current events on aviation; and a special project in radio, electronics, engines, or other elements of successful aviation enterprises.

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BOLSA GRANDE HIGH SCHOOL
Garden Grove Unified School District
Attention: Joseph Riedel, Principal
9401 Westminster Blvd.
Garden Grove, California 92641
Telephone: (714) 638-6424

Program Began: 1967

Current Enrollment: 115

The administration at Bolsa Grande High School requested permission to institute (on an exploratory basis) an introductory course in aviation. The Garden Grove Board of Education approved the proposal, recognizing the importance of using the aviation interest of youth to help motivate and direct learning in the classroom and laboratory. The program is designed for students at all levels of academic ability, some of whom will be destined for professional careers as air force or airline jet pilots, aeronautical engineers, airframe and powerplant mechanics, stewardesses, sales and servicemen, private pilots, flight instructors, and aircraft assembly men. In addition, the course provides experience in the area of public relations, logistics (interior designs, brochures, and so forth) and sales projections--airlines/commercial/general aviation.

The proposed course of study for the five-day lecture and laboratory week includes:

1. Realm of flight--history
2. Theory of flight--lift, drag, thrust, weight, acceleration, and so forth.
3. Force study, an analysis of influence on airfoil
4. Review and preparation for FAA test
5. Design-analysis of airshapes and construction of same
6. Application of unit design to frame
7. Review of vector and stress forces
8. Semester review and preparation for FAA test and evaluation
9. Pilotage, aerial maps, use of symbols, point-to-point flight
10. Pilotage navigation, radius of action, and so forth.
11. Flight planning, airports, and terrain
12. Review and preparation for required FAA test and evaluation
13. Weather phenomena--cloud types, fronts, and their effect
14. Weather sequence reports and radio aids
15. Radio-electronic aids--Vortac, omni, and others
16. Semester review and preparation for the FAA test

Outside elements to continue the interest developed in the classroom include:

1. Flying club made up of 23 students who on their own time and at their own expense are taking flight lessons at four different flight schools.

2. A model airplane club including 120 students who participate in model construction, starting with hand-launched gliders. The group is now working on ROG (rise off ground) rubber-powered models as well as radio-controlled models.

3. Aviation club consisting of 35 members on campus that includes such projects as the preparation of a letter for residents living near airports stressing airport safety for children, adults, and pets; navigational aids marked on prominent buildings in the area; and field trips on their own time to airports, museums, and industries in the area.

4. Aerobatic club consisting of six students who on their own time and at their own expense actively participate in air show aerobatic demonstrations using both powered and glider aircraft.

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BURBANK SENIOR HIGH SCHOOL
Sacramento City Unified School District
Attention: Woodrow Nelson
Aero Instructor
3500 Florin Rd.
Sacramento, California 95823
Telephone: (916) 421-9400

Program Began: 1968

Current Enrollment: 54

Detailed course description not available.

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CHESTER HIGH SCHOOL
Plumas Unified School District
Attention: George Cooper, Principal
P. O. Box 797
Chester, California 96020
Telephone: (916) 258-2126

Program Began: Spring, 1969

Current Enrollment: 18

The aviation education program at Chester High School uses Sanderson educational and audio-visual materials. The course covers preflight, meteorology, flight computer, navigation, radio navigation, aircraft radio communications, instruments and systems, and federal aviation regulations.

The aviation program also includes a flight indoctrination course in a Cessna 150 type of aircraft. The flight training consists of 30 minutes each month for 10 months. Cost of the flight training is borne by the school district. The purposes of the flight training are (1) to motivate the students; (2) to make their aviation education more meaningful; and (3) to provide an impetus for students to continue flight training using their own financial resources.

The aviation education class meets one hour before the beginning of the regular school day and takes one semester to complete. The course adequately prepares the student to pass the FAA private pilot written examination. All materials are furnished free-of-charge to the student. Students participate in field trips to a municipal airport, weather bureau, flight service station, control tower, and radar approach control.

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CLAREMONT HIGH SCHOOL
Claremont Unified School District
Attention: Alexander Hughes, Principal
Norman Taylor, Aviation Instructor
1601 N. Indian Hill Blvd.
Claremont, California 91711
Telephone: (714) 624-9041

Program Began: 1969

Current Enrollment: 0 (32, Summer 1971)

Summer program only. See San Antonio High School for description of course.

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CLEVELAND HIGH SCHOOL
Los Angeles Unified School District
Attention: John Sanders, Principal
Fred Ferdon, Instructor
Industrial Arts: Ground School
8140 Van Alden
Reseda, California 91335
Telephone: (213) 349-8410

Program Began: September, 1971

Current Enrollment: Industrial Arts - 14
Ground School - 22

The program at Cleveland High School is an outgrowth of a course that began at Lincoln High School in 1970 through the efforts of Fred Ferdon, an industrial occupation technical drafting instructor who is also a licensed pilot and certified aircraft mechanic.

Students are given practical as well as theoretical experience in the various crafts associated with the aircraft industry. At the present time, the class is assembling the wing and fuselage of a two-passenger all metal monoplane (a Thorp T-18) powered by a 130 h.p. Lycoming engine, which they hope eventually to fly. All the work is being done by the Industrial Occupation Technical Drafting class under the direction of Mr. Ferdon.

As aviation instructors know, FAA regulations require all engine work to be done by a certified repair station. Hence, the class is looking for a station which will volunteer its services to overhaul the engine. They are also looking for wheels, tires, cowling, canopy, and various other parts necessary to complete the plane.

Mr. Ferdon is conducting a "ground school class" after school which also helps in building the plane. This class, which is now experimental, will be offered as part of the industrial occupations curriculum next semester. It could serve as a substitute for industrial math or senior math.

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CLOVIS HIGH SCHOOL
Clovis Unified School District
Attention: Peter G. Mehas, Principal
Maj Walter F. Smith, USAF (Ret)
Aerospace Education Instructor
5550 N. Fowler Ave.
Clovis, California 93612
Telephone: (209) 299-7211

Program Began: 1969

Current Enrollment: 85

The Clovis High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities, including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

Scientific in scope, this program at Clovis High School has been an integral part of the science department; and the enrolled students receive science credit which will satisfy the high school science requirement.

Many field trips to supplement their classroom work are provided students by the district. Last year's orientation flight was made in a C-47 furnished by the California Air National Guard and piloted by Lt Col Al Thompson, who instructs in the Fresno State College Air Force program.

In response to questions about costs, the Clovis High School administration states: "...the overall cost of the program on a per-student basis is no greater than the cost of other specialty programs. If the Air Force were to drop the program, we would no doubt continue it but without uniforms and perhaps without a teacher aide. The other costs of the program are in the long run less than those in a laboratory-oriented course such as chemistry. If this program were viewed as vocational in nature we would accept the fact that there are excess costs involved."

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COMPTON HIGH SCHOOL
Compton Unified School District
Attention: Aaron C. Wade, Principal
Lt Col Sid Newsom, USAF (Ret)
Aerospace Education Instructor
601 S. Acacia St.
Compton, California 90220
Telephone: (213) 639-4321, ext 257

Program Began: 1967

Current Enrollment: 120
(Plus 60 in summer school--total, 180)

The Compton High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities, including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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COSTA MESA HIGH SCHOOL
Newport-Mesa Unified School District
Attention: Robert Perrin
Aerospace Education Instructor
2650 Fairview Rd.
Costa Mesa, California 92626
Telephone: (714) 545-9431

Program Began: 1968

Current Enrollment: 48

The Costa Mesa High School aerospace education program places stress on career opportunities in both civil and military occupations. The aviation industry and air transportation constitute a large segment of the employment possibilities and exercise a tremendous effect upon our community.

Students are invited to bring a parent request from home indicating that the student has permission to take the course. In addition to the parent request, the student must be a junior or a senior and have an interest in aviation.

Items included on the checklist to specify particular interest include:

1. Airline pilot
2. Corporate pilot
3. Military
4. Any flying job
5. Flying instructor
6. Aviation mechanic
7. Aviation electronics
8. Aviation management
9. Airline stewardess
10. Air communications

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CULVER CITY HIGH SCHOOL
Culver City Unified School District
Attention: Edwin L. Church, Jr., Principal
Calvin Pitts
Aerospace Education Instructor
4401 Elenda St.
Culver City, California 90230
Telephone: (213) 839-4361

Program Began: 1969

Current Enrollment: 75

Program Includes:

1. FAA approved ground instruction
2. FAA approved flight instruction (in cooperation with local Fixed Base Operator)

Day Classes: Aerospace I, Aerospace II

Evening Classes: Ground School I, Ground School II

AEROSPACE I is a classroom course designed to give the student an overview of the aerospace industry, including air transportation, navigation, regulations, meteorology, aerodynamics, history of aviation, radio communication and navigation, aircraft instruments, and job opportunities. A practical application is made of preflight and in-flight knowledge required of a pilot. Many state and FAA films are used.

AEROSPACE II is a laboratory course designed to provide the student with an opportunity for building, demonstrating, and testing aerodynamic concepts. Lectures and classroom activities are used as needed.

In Aerospace I the students spend much time taking notes, discussing, writing papers, and learning the academic content involved. An innovation was tried in teaching the history of aviation. This was originally necessitated by a lack of funds which meant an absence of textbooks. Feeling that history need not be drab, permission was obtained for painting one entire wall of windows (40' x 15') with poster paint. The color was blue; the effect was to obtain the colors of the various layers of the atmosphere. The class was divided into 10 groups with a group leader for each. Beginning with the era of "balloons," then the 1900's, the windows were divided into a section for each decade, ending with one for "the future." Using pictures, models, phosphorus paint, special lighting, and various other ideas, the "Historical Review of Aviation" began to take shape in the form of a large mural. The students were excited and deeply involved. Class reports and discussions, pictures and models, and reading and research taught a subject more dynamically than any single instructor could ever have done alone. The instructor became a resource person encouraging the students with their projects. In short, history became fun.

Other activities include the building of a wind tunnel utilizing the school workshop, building and hanging static model displays, three-dimensional weather displays, paper plane contest using the high school auditorium, power model contest using the athletic field, field trips to see the 747, building a one-place glider, flights at the local airport, and a special Air Youth Day Culver-Style.

The first years have been full and exciting, have taught us how to innovate, and have taught us ways to improve our programs for succeeding years. We have learned again that "dedication is not dead," and that youth still looks for something in which it can become involved. This course has been received as a much welcomed positive emphasis.

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DAVIS HIGH SCHOOL
Modesto City Schools
Attention: Gary Giovannoni
Aviation Education Instructor
1200 Rumble Rd.
Modesto, California 95350
Telephone: (209) 524-9671

Program Began: 1969

Current Enrollment: 69

The aviation education program at the Davis High School is taught on a semester basis. The course is to be considered a ground school, and includes the subjects normally studied by students desiring to take the private pilot's examination to obtain the FAA certificate. The school owns no aircraft and does not offer a flight program. However, flight instruction is greatly encouraged.

The course content covers preflight, principles of flight, aircraft and engine operation, aircraft performance, instruments and systems, weather, navigation, radio navigation, communications, and the Federal Aviation Administration regulations.

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DEL NORTE HIGH SCHOOL
Del Norte County Unified School District
Attention: George F. Whalen, Principal
Keith Wise, Aeronautics Instructor
1301 El Dorado St.
Crescent City, California 95531
Telephone (707) 464-6141

Program Began: 1951

Current Enrollment: 83

Program Includes:
1. FAA approved ground instruction for pilots
2. FAA approved flight instruction for pilots

The aero curriculum at Del Norte High School consists of a study of the necessary facts required to pass the private and commercial written examinations. Along with the ground instruction, a flight program is conducted in the school's PA-18-140.

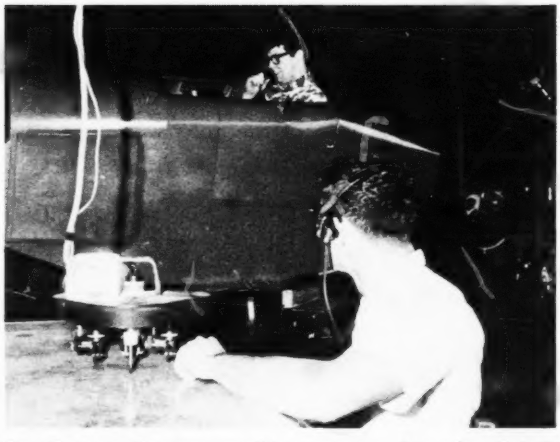
Each student receives an indoctrination flight that provides an aerial perspective of this isolated community. Students see and experience all systems

Del Norte County High School aviation students are serious about their flying. In the past 21 years over 900 students have taken the ground school course, 375 have taken flight instruction, and 200 have soloed (5 girls). Many graduates are earning a living in various aviation careers.

Students discuss landings.

Instructor Keith Wise teaches students how to pre-flight the airplane before takeoff.

Students practice using instruments in the Link Trainer.



Students learn radio usage in the Link Trainer.

A student works on the plane he purchased in order to build flight hours for a commercial pilot license.

of transportation and learn about their relative importance. Those who wish to take more hours of flying do so at the rate of $2.00/hour for the first 10 hours, then $4.00/hour up to 50 hours, then $6.00/hour for any subsequent flying time.

The maintenance, liability insurance, and flight instructor cost are borne by the district. The money paid by the students covers the fuel, oil, and hull insurance on the aircraft.

It has been determined that for our program the four-place plane is best for training. It enables one or two students to observe while another is taking lessons. Also, on cross country flights of long duration three students share the cost of flying and thus go farther for less money.

Cross country flight enables many students to see areas they have never seen before. Many parents want to "see what their children are getting into" and after accompanying their children on an instructional flight usually find that their fears and qualms have been dispelled.

Since 1952 more than 200 students have soloed. Eighty students have received their private rating and two their commercial rating. Many graduates are earning a living in various aviation careers.

The ground instruction and the flight instruction are taught by Keith Wise, with Ardean Sveum helping out on Sundays with the flight instruction.

One of the basic purposes of the program has always been to give the student more incentive to work at his studies. It often helps motivate interest in areas where no interest previously existed.

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DIXON HIGH SCHOOL
Dixon Unified School District
Attention: Andrew Yon Kondy
Aviation and Industrial Arts Instructor
455 East "A" St.
Dixon, California 95620
Telephone: (916) 678-2391

Program Began: 1969

Current Enrollment: 14

The general aviation industrial arts type program at Dixon is blessed with the presence of two experienced, high-time, transport-type pilots (retired USAF), who are offering their time and the benefits of their experience free.

A flight program is offered in a Cessna 150 ('67) that was purchased by the instructor and donated to the school board. The ownership of the aircraft is a joint venture between the instructor and the school board. Insurance is provided by the board, and the instructors are part of the regular teaching staff.

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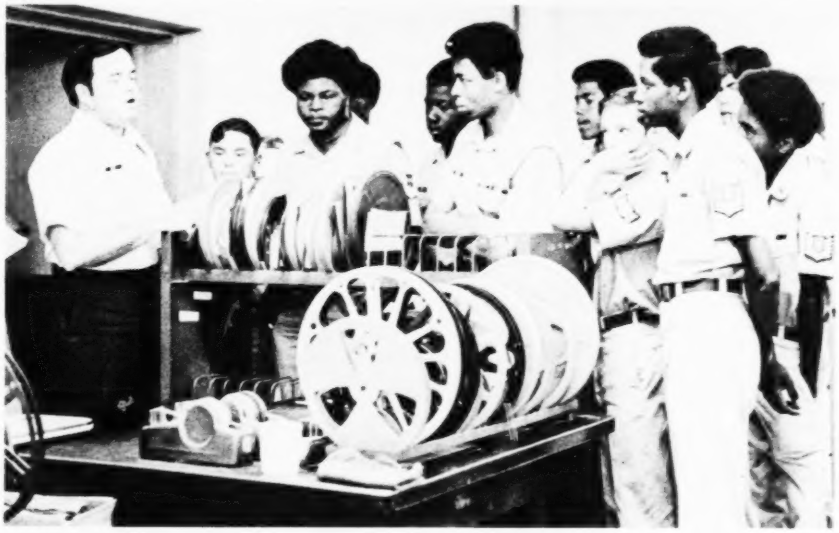
Dominguez High School students pose for picture before take-off.



Students learn about film processing techniques during a field trip to the Air Force Audio-visual Center.

Dominguez High School aerospace students perform a preflight inspection as part of their ground school course.

Aerospace students learn to check wing flaps.

DOMINGUEZ HIGH SCHOOL
Compton Unified School District
Attention: Wilbur A. North, Principal
Lt Col William E. Booth, USAF (Ret)
Aerospace Education Instructor
15301 San Jose Ave.
Compton, California 90221
Telephone: (213) 636-2263

Program Began: 1969

Current Enrollment: 189

The Dominguez High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities, including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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DOWNEY HIGH SCHOOL
Downey Unified School District
Attention: Alexander F. Collie
Aeronautics Instructor
11040 S. Brookshire Ave.
Downey, California 90241
Telephone: (213) 923-6711

Program Began: 1969

Current Enrollment: 83

Course Title: Aeronautics I and II

Aeronautics I

1. Facts of flight
2. General operation of aircraft
3. Controls and maneuvers
4. FAR and traffic pattern
5. Load problems
6. Density problems
7. Meteorology

Aeronautics II

1. Navigation
2. Chart reading
3. Dead reckoning
4. Radio navigation
5. Instruments (adult class, introduction to instrument flight)

Course Objectives

1. Give students a good basic understanding of flight and flying.
2. Safety stressed on airplane maneuvers and pilot habits.
3. Enable pupil to pass FAA private or commercial pilot written examination.

Instructor holds commercial pilot with instrument rating--also FAA basic and advanced ground instructor rating with Link instructor rating.

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Downey High School students ponder "Add right" and "East is least" as they learn to navigate.

Education can be fun when a student finds an answer.

A Downey student finds the way.

EISENHOWER HIGH SCHOOL
Rialto Unified School District
Attention: Albert J. Keegan, Principal
1321 N. Lilac Ave.
Rialto, California 92376
Telephone: (714) 875-3000

Program Began: 1969

Current Enrollment: 14

The aviation education class at Eisenhower High School is held in conjunction with San Bernardino Valley College under the auspices of the Veysey Bill.

The purpose of the aerospace science program is to introduce the student to occupational opportunities in the aerospace industry and to furnish basic information necessary to qualify for a pilot's license.

Course Outline

1. History

Impact of the aerospace age, now and in the future; history of aerospace

2. Aerodynamics

   Basic parts of vehicle; theory of flight; function of controls; loads and load factors; preflight inspection; weight and balance; Quiz #1; performance; space aerodynamics; vocational opportunities; field trip to civilian airport to preflight plane--start of 30-minute orientation flights conducted after school and on weekends

3. Airframe

   Wing shape and structure; fuselage and empennage; landing gear, materials and safety; space vehicle structure; vocational opportunities; Quiz #2

4. Powerplants

   Reciprocating engine; aircraft engines; jet engine; jet engine explanation by visiting rocket specialist; maintenance and operation of powerplants; vocational opportunities; Quiz #3; field trip to an engine overhaul shop

5. Meteorology

   Current weather data; nature of the atmosphere; air motion; air masses and fronts; fogs; analysis of data; field trip to a federal aviation weather station for briefing by an observer and a forecaster; interpreting weather reports and forecasts; space implications; Quiz #4; vocational opportunities

6. Navigation

   Methods of chart projection; pilotage and dead reckoning; computer use; celestial navigation and electronic navigation; wind triangle; flight planning and use of charts; planning of cross-country flight to be taken by class; space navigation; Quiz #5; class discussion with a visiting master navigator; vocational opportunities

7. Air Traffic Control

   Organization; airway structure; regulations and publications; air traffic control procedures and terminal control; field trip to FAA control tower and traffic control center; start of 1½-hour navigation flights conducted after school and on weekends; vocational opportunities

8. Federal Air Regulations

   Definitions and abbreviations; certification of pilots, flight instructors, and other crew members; controlled airspace and flight procedures; airways and jet routes; general operating and flight rules; special air traffic rules, traffic patterns and safety investigation; Quiz # 6; Airman's Information Manual (AIM); use of FAA publications--Practical Test #1

9. Space Vehicles

   Physics of space flight; guidance systems lecture by a guidance specialist; satellites and space communication; manned space travel and space medicine discussion with a visiting flight surgeon; values of space exploration; vocational opportunities

10. Review and Practical Test

    Navigation review; meteorology review; flight safety; preparation of a cross-country flight plan--Final Practical Test

11. Career Applications

    Field trip to aircraft manufacturing plant, discussion of vocational opportunities observed; education requirements; training and expense; field trip to an Air Force base, discussion of vocational opportunities observed; aptitudes; aptitude testing; guidance discussion; turn in, and discussion of, paper on choice of aviation vocation/hobby; the pre-test given at the first of the course given again and final examination

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EL DORADO HIGH SCHOOL
Placentia Unified School District
Attention: **Marvin Stewart, Principal**
Lt Col Andrew White, USAF (Ret)
Aerospace Education Instructor
1651 N. Valencia Ave.
Placentia, California 92670
Telephone: (714) 524-4374

Program Began: 1967

Current Enrollment: 104

The El Dorado High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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ELK GROVE HIGH SCHOOL
Elk Grove Unified School District
Attention: Howard Winter
Chairman, Science Department; and
Aerospace Education Instructor
9800 Elk Grove-Florin Road
Elk Grove, California 95624
Telephone: (916) 421-5479

Program Began: 1964

Current Enrollment: 150

Aerospace education was introduced into the Elk Grove Senior High School science curriculum in 1964 for four primary reasons: (1) to continue progress in exploring the endless reaches of the unknown and to develop a greater understanding of man's environment; (2) to keep the public abreast of the frontiers in science, as an informed public can appreciate and encourage further progress; (3) it is recognized that in properly organized courses of aerospace science many principles of mathematics, physics, space biology and medicine, and other science disciplines can be given applications and proper perspective to make those sciences more meaningful and interesting to students; and (4) to answer the needs of our national interests in defense and progress. Being foremost in technical knowledge requires an increase in the number and variety of skills needed to perpetuate the space industry. Efforts in space have exposed many new and interesting occupations which await the person who possesses the skills and experience to meet the challenge.

The program begins with an extensive study of atmospheric travels, and progresses through consideration of more recent modes of outer space travel. Three-quarters of course material is similar to units of study experienced in a comprehensive commercial ground school course. This includes a study of preflight facts, meteorology, flight computer, navigation, radio navigation, instrumentation, aerodynamics, and federal aviation regulations. (Following this phase of the course, the student is encouraged to take the written examination for a private pilot's license. Several have done so with success.) The final quarter of study is concerned with Space Age Fundamentals. Here the student is presented with an investigation and study of space-oriented subjects. These include units such as: The Realm of Space--the sun and its captives; Space Travel--basic principles, earth satellite missions, lunar missions, and planetary missions; Man in Space--man's food, water, and other basic needs; Space Systems--propulsions, electrical power, structures, guidance and control, and communications; and Orbital Geometry.

Certain courses of science require that resources and facilities be available for the student to achieve a more complete understanding in the discipline. To provide real experiences and concrete understanding of concepts, principles, operations, and skills, each student receives a one-hour orientation flight for which he pays $2. The district pays $15 per hour for the plane, which is flown by a commercial flight school pilot. The orientation flights are laboratory experiences and are essential to the aerospace science course very much as a chemistry lab is to the chemistry program. An attractive addition to the course is the use of the GAT I Link Flight Simulator. Each student receives a 20-minute session in which he becomes familiar with flight controls and basic instrument and navigation procedures used in modern flight.

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FAIRFIELD HIGH SCHOOL

Fairfield-Suisun Joint Unified School District
Attention: Gordon G. Gibson, Principal
Lt Col Rex W. Floyd, USAF (Ret)
Aerospace Education Instructor
205 E. Atlantic Ave.
Fairfield, California 94533
Telephone: (707) 422-8672

Program Began: 1968

Current Enrollment: 122

The Fairfield High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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FRESNO HIGH SCHOOL

Fresno City Unified School District
Aviation Education Instructor
1839 Echo Ave.
Fresno, California 93704
Telephone: (209) 222-4851

Program Began: 1968

Current Enrollment: 27

Fresno High School currently has only one class of aviation in this its fourth year of developing a pilot program. The course has been accepted as a regular course in the Fresno Unified School District, and it is anticipated that enrollment will increase by one or two classes next year.

Although the school owns no aircraft and does not offer a flight program, flight instruction is highly encouraged. A half-hour orientation flight is arranged in the fall; and a one and one-half hour cross-country flight in the spring gives each student the experience of planning the flight and navigating one leg of a three-leg flight.

Listed below is a summary of the course offered, showing the number of weeks and the units covered. A more complete breakdown of the course is available from the school.

Unit		No. of Weeks
1. Introduction and History of Aviation		3
2. Preflight and Aerodynamics		4
3. Powerplants and Aircraft Structure		2
	1st Quarter	9 weeks
4. Instruments and Instrument Systems		3
5. Meteorology		6
	Semester	18 weeks

6. Navigation		6 weeks
7. Radio Navigation		3
	3rd Quarter	27 weeks
8. Radio Communications		3
9. Flight Planning		2
10. Careers and Vocational Opportunities		2
11. Future of Aviation--Man in Space		2
	Semester	36 weeks

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Fresno High School students go over the course with their instructor before take-off.

GRANADA HIGH SCHOOL
Livermore Valley Joint Unified School District
Attention: Jack P. Lee, Principal
Calvin Boyd, Aviation Instructor
400 Wall St.
Livermore, California 94550
Telephone: (415) 443-1122

Program Began: Summer, 1967

Current Enrollment: 16

The district has embarked upon an aviation education program, recognizing the lack of aviation education and the domestic and international developments in aviation, including the supersonic transport, job opportunities for which there are no trained personal, and the growth of general aviation and commercial air transportation as well as the peaceful exploration of space by NASA. Construction now under way will provide a separate aeronautical science classroom.

Objectives

A. To provide instruction that would enable each student to take and successfully complete the FAA written pilot examination
B. To help students become aware of the place of aviation in modern American society
C. To provide instruction for the students in related fields associated with aviation
D. To supply a basic stimulus that will generate the flame of interest, hopefully initiating the students' further pursuit in the area of aviation
E. To help supply a basic manpower pool from which aviation industries can draw needed personnel

The course originally consisted of a seven-week summer course, two hours and 15 minutes each day, five days a week. The following topics were included:

Theory of Flight and Aircraft Structures
Aircraft Powerplants
Flight and Safety Practices
Air Traffic Control
Radio Operation and Services
Radio Aids to Navigation
Meteorology and Weather--Recognition and Analysis
Weather Maps, Reports and Forecasts
Cross-Country Navigation
Instrument Flight Instruction

Extensive use of the Jeppesen instructional materials and FAA manuals, films, and bulletins was augmented by field trips to the Control Tower, ATC, Weather Bureau, and flight service station. All students were given a flight indoctrination experience. Plans are being made to purchase three good used simulators and possibly an airplane or two whenever these become available.

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HOOVER HIGH SCHOOL
Glendale Unified School District
Attention: William Murphy, Principal
George Novinger
Aerospace Science Instructor
651 Glenwood Rd.
Glendale, California 91202
Telephone: (213) 242-6801

Program Began: September, 1968

Current Enrollment: 65

The major topics included in this one-year (two-semester) course are:

History of Aviation and Spaceflight
Scientific Bases for Flight and Aerodynamics
Airframe Structure and Powerplants, Instruments
Supersonic Flight
Physiology and Psychology of Flight
Socioeconomic Impact and Influence on our Culture and Society
Careers and Job Opportunities in Aerospace
Navigation and World Geography, the Flight Computer
Radio Communications and Radio Navigation
Federal Aviation Regulations
Meteorology
Airports and Air Terminals
Preflight Facts and Basic Maneuvers

Outside speakers, field trips, and films are scheduled throughout the year. The teacher provides an opportunity for each student to take an orientation flight during the year.

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LOS ANGELES CITY SCHOOLS
Attention: Elmo C. Smith, Supervisor
Regional Occupational Program (ROP)
450 N. Grand Ave.
Los Angeles, California 90012
Telephone: (213) 687-4684

High School students from many sections of Los Angeles are being trained off-campus, on airport, and other aeronautical sites. The course includes FAA certificated airframe and power plant instruction.

Graduates of the program after two years acquire a saleable skill, a pilot's license, and enthusiastic motivation. For additional details contact the ROP office.

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LOWER LAKE HIGH SCHOOL
Konocti Unified School District
Attention: **Donald N. Prosser**
Aviation Instructor
P.O. Box 507
Lower Lake, California 95457
Telephone: (707) 994-6195

Program Began: 1968

Current Enrollment: Ground School, 32; Flight Instruction, 23; Aircraft Maintenance, 15--Total, 70

In recognition of the rapid advances being made in the fields of aviation and aerospace, our district has instituted programs from junior high through high school with the following objectives in mind:

1. To provide practical knowledge and experience in aviation-aerospace to the end that students may better choose their future careers
2. To improve the motivation of students by adding to the curriculum courses that provide challenges for high standards of performance in subjects that are meaningful to the students
3. To coordinate flight experience with ground school training at costs to the students low enough to permit their entry into a field they might not otherwise afford
4. To improve academic standards through increased interest and awareness in subjects related directly and indirectly to aviation-aerospace

The courses offered are Aviation Ground School I and II, Primary Flight Instruction, and Aircraft and Powerplant Maintenance. Flight instruction which will enable the student to pass FAA examinations for private and commercial pilot licenses is coordinated with ground school. All courses are one year in length. The following topics are included:

Theory of Flight
Powerplants
Preflight
Meteorology
Navigation
Radio-Navigation
Instruments
Instrument Flight
Federal Air Regulations
Maintenance Procedures
Aircraft Procedures
Job Opportunities

Sanderson ground school materials are used and opportunities for experience in aircraft maintenance are provided with school-owned aircraft. Approximately 15 percent of the emphasis in this course is devoted to career opportunities in the field.

In the 1970-71 program 45 students took aviation ground school. Of these, 39 had at least some flight experience, and 15 soloed. Six were private pilots at June graduation. One became a commercial pilot. One girl received her private pilot certificate at age 17 years and 2 days. Thirty-six percent of the flight students passed FAA tests, private or commercial.

Students participate in field trips to flight service stations, control towers, airline facilities and Youth Day activities. Also, a local flight club was formed to engage in various activities relating to fund raising and servicing.

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William Carle, Superintendent of Konocti Unified School District, accepts keys to the Cessna 150 awarded to Lower Lake High School for their use during the 1969-70 school year from Harry Noblitt, of Long Beach. School board members, Flight and Ground Instructor Don Prosser (left) and part of the aviation class look on.

MANUAL ARTS HIGH SCHOOL
Los Angeles Unified School District
Attention: Josephine Spearman
4131 South Vermont Ave.
Los Angeles, California 90037
Telephone: (213) 232-1121

Program Began: 1967

Current Enrollment: 20

The course being offered at the Manual Arts High School is unique in that it serves senior high school students from four other high schools of Los Angeles City. The course consists of Aeronautics I and II. It provides students with a knowledge of aeronautics and reinforces their concepts and skills in science and mathematics. Activities are included which broaden the students' horizons of career opportunities and are designed to offer direction toward continued study in aeronautical engineering, meteorology, and space sciences.

The course consists of laboratory science experiences integrating meteorology, aerodynamics and theory of flight, navigation, aircraft design, powerplant principles, and federal air regulations. The development of skills in geography and the enlargement of vocabulary to include nomenclature not found in other parts of the curriculum are stressed. Through practical application, mathematic skills are strengthened, and new skills are introduced through the use of computers and triangulation problems. Emphasis is placed upon principles of physics basic to aerodynamics and meteorology. Extensive use is made of audio-visual aids. Frequent field trips are made to aircraft industries, airports, commercial aircraft transportation systems, and military establishments.

One year of science is required for the course along with an average or better ability of student applicants.

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U S AIR FORCE

Students visit the APEX Aeronautics Center.

Through the courtesy of PSA, the students of APEX Aeronautics Center at Manual Arts High School were flown to San Diego, where they visited the PSA Training Center.

MARYSVILLE HIGH SCHOOL
Marysville Joint Unified School District
Attention: Lesta Joubert, Principal
Lt Col A. S. C. Fong, USAF (Ret)
Aerospace Education Instructor
18th and B Sts.
Marysville, California 95901
Telephone: (916) 743-6541

Program Began: 1969

Current Enrollment: 45

The Marysville High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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MENDOCINO COUNTY SCHOOLS
Regional Occupation Center
Attention: Philip E. Nickerman
Director, Vocational Education
Courthouse
Ukiah, California 95482
Telephone: (707) 462-1720

Program Began: 1970

Present Enrollment: 151

The Regional Occupation Center (R. O. C.), administered by the County School Superintendent and Mr. Nickerman, provides aviation instruction in the high schools in Covelo, Fort Bragg, Mendocino, Ukiah, and Willits, and to the Pomelita Junior High School (grades 7-8) at Ukiah. In addition, the Mendocino County staff coordinates the aviation education programs in the Anderson Valley High School at Boonville and the Lower Lake High School at Lower Lake (Lake County).

At Pomelita, an integral part of the program, 30 students each semester of the 1971-72 school year will have aviation experiences, including career opportunities provided by the Federal Aviation Administration; and will learn about weather forecasting, flight service, aircraft sales, service and operation, and participate in the work experiences of people engaged in these occupations.

The general objective of the R. O. C. program is to provide a means whereby high-quality vocational, technical, and occupational preparation opportunities can be extended to a broader base than is currently being provided by our public schools.

Instructional objectives are: (1) instruction leading toward gainful employment; (2) occupational upgrading by improving upon and developing existing skills; and (3) preparation for advanced training programs offered by the Regional Occupation Center or other training institutions.

Placement and follow-up of trainees upon completion of a specific trade/technical vocational program are determined by the particular goal or goals of that instructional program.

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MENLO ATHERTON HIGH SCHOOL
Sequoia Union High School District
Attention: Jean L. LaLanne
Chairman Industrial Arts
Middlefield Rd. and Ringwood Ave.
Atherton, California 94025
Telephone: (415) 369-1412

Program Began: September 1970

Current Enrollment: 58

While the Air Transportation program at Menlo Atherton High School parallels the usual ground school program for a private license, one major objective is

The R-2800 gets a new manifold.

N58?7E
MENDOCINO COUNTY
R.O.C.
PROGRAM

The Mendocino County trainer plane has flown over 1,200 hours this year. It is completely maintained by the aircraft mechanics class.

to explore as much of the air transportation industry as is possible, with special emphasis on occupational opportunities and requirements.

Of necessity this is essentially a classroom approach. The Sanderson "package" is the basic instructional tool, and extensive use is made of films, guest speakers, and field trips to "vitalize" the course. During the course of the program last year, classes:

1. Viewed approximately 50 related films
2. Were addressed by people representing the following occupations or occupational areas:

   - Fixed Base Operations
   - Pilots
     - Commercial
     - Instructor
     - Photographic
     - Military
     - Test
   - Flight Engineers
   - Flight Instruction
   - Air Freight
   - Aerial Photography
   - Aircraft Mechanics
     - Air Frame
     - Engine--Piston and Jet
     - Instrument
     - Hydraulic and Related Systems
     - A & P Certified
   - Aircraft Engineers
     - Designs
     - Systems
     - Research
   - Gyroscopes and Inertial Guidance

3. Participated in several field trips during which the class visited and were addressed by personnel associated with:

   San Mateo County Airport
   An FAA aircraft control operation
   TWA facilities, including maintenance, freight, and passenger service
   Pan American training facilities and flight simulators
   San Francisco International Airport
   A United States weather office
   An FAA flight service station
   NASA's facilities at Ames Research Center, including wind tunnels, simulators, Vistol aircraft, and so forth
   The dirigible hangar at Moffett Field
   An operational anti-submarine patrol aircraft
   Several commercial aircraft, including a 747
   Helicopter and private aircraft

In addition, each student was required to complete a detailed analysis of an aviation-related occupation of his choice. To facilitate this analysis, a rather comprehensive file of occupational and educational material relating to aviation was established.

In an effort to aid students in formulating their future educational plans, arrangements were made for the chairmen of the Aeronautics Departments of both San Mateo Junior College and San Jose State College to meet with the classes and explain their programs in detail.

Perhaps the high points of the program insofar as the students are concerned are the two in-flight experiences provided. The first is an orientation flight from the local county airport during which each student has the opportunity to sit in the left seat and handle the controls of the plane while flying over local terrain. For this program the students are divided into three groups. While one is in the air, another is in the control tower, and the remaining students are visiting the facilities of one of the fixed-base operators. The groups are rotated as each flight is completed till all have flown.

The second is a three-leg cross country navigation flight for which the students must do the preflight planning and initiate a flight plan. During this flight the students are expected to "fly" one leg, using proper radio communication, radio navigation, and dead reckoning navigation procedures insomuch as they are able.

This year, each student is expected to complete an aviation-oriented project of his choice, and the possibility of conducting an "Aeronautics Fair" where these projects will be displayed for the benefit of the school and community is being considered. Another innovation for this year is that Air Transportation students will devote approximately two and one-half hours to completing the Armed Services Vocational Aptitude Battery, a series of tests designed to measure their vocational aptitudes. The results will be supplied to their counselors to provide the students with their scores and discuss their implications as a step toward more effective vocational and educational counseling.

Of the 58 students presently enrolled in the course, only approximately ten percent go on to get their private licenses or take the required written examination. Yet, one in eight of the employed people in San Mateo County is in a job in some way related to the air transportation industry. The instructor will continue to emphasize career implications.

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MONTEREY PENINSULA UNIFIED SCHOOL DISTRICT
Attention: Allan J. Petersdorf, Superintendent
P. O. Box 1031
Monterey, California 93940
Telephone: (408) 649-7414

See description for Seaside High School.

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MORENO VALLEY HIGH SCHOOL
Moreno Valley Unified School District
Attention: Gareth Goddard, Principal
Maj Marvin Odle, USAF (Ret)
Aerospace Education Instructor
23300 Cottonwood Ave.
Sunnymead, California 92388
Telephone: (714) 653-3156

Program Began: 1967

Current Enrollment: 113

The Moreno Valley High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities including career opportunities in both civil and military establishments. Emphasis is on natural, physical, and social sciences. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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NEWPORT-MESA UNIFIED SCHOOL DISTRICT
Attention: Mrs. Fay Harbison, Director
Space Science Learning Program
1601 Sixteenth St.
Newport Beach, California 92660
Telephone: (714) 645-0600

Program Began: 1966

Current Enrollment: 26,650 - - - - - - - - - - - All (K-12) students receive some aerospace education

Newport-Mesa Unified School District conducted a unique Space Science Learning program from September 1, 1966, through March 30, 1971. This was an ESEA, Title 3, project federally funded in the amount of $221,765, involving students in grades K through 12. throughout Orange County. Thirty-four faculty members of the district have planned and written programs under the direction of one district administrator. Representatives of most school districts in Orange County have shared in the professional seminars.

Main Objectives

1. To improve and enrich science and math offerings for students K through 12 through the implementation of specialized programs to meet new curricular needs of students
2. To bring science curricular offerings "up to the minute" by making it possible for space scientists and teachers to work together in the development of materials to meet curricular needs

Other Objectives

1. To carry out planned change in science and math curriculum by utilizing the mobile science laboratory as a tool
2. To evaluate a computer math phase of the project by analyzing per pupil costs and student achievement

Activities

Specialized curricular units developed by teachers, with the assistance of scientists and engineers from local space industries, are being implemented in the classroom. The new units extend from space science in the elementary school, first grade, through seminar and institute activities and course work on the high school level.

The second year of a three-year program of science center activities included:

1. A high school summer science institute presented by teachers and scientists
2. A space science seminar for sixth graders presented by teachers and local scientists
3. An in-service training program for teachers of science and math
4. Implementation of a mobile science laboratory program
5. Development of computer mathematics on the junior high school level

Participation

Members of the scientific community, as it is represented in space industries throughout Orange County, have served as an advisory board which has identified new curricular needs, planned student and teacher seminars, and developed plans for a mobile science laboratory. Board members and space industry colleagues have worked with teachers to present lessons directly to students in seminars and in elementary, junior high, and senior high school classes. The human resources available to the district are being utilized to share the task of educational responsibility. Members of the faculty of the University of California at Irvine have served on the advisory board in the development of units and in student seminars.

Nonprofit private school children have been included in all student seminars, and the experimental mobile science laboratory has extended services to interested schools.

Data Obtained

New units on space science have been written and are being introduced into the science and math curriculum on selected grade levels in the elementary school, within traditional subjects at the high school level, in completely new subjects on the high school level, and in units within the social science field. In many cases, the units contain subject matter data presented for the first time to students. The data within the units represent science and mathematics information prepared by teachers and scientists for the purpose of stimulating learning within students and to assist them to prepare for a rapidly changing environment.

Publications

High School Summer Science Institute; Sixth Grade Science Seminar; Computer Mathematics for the Middle School; Computer Mathematics in High School; Mobile Laboratory Lessons, Space Science in the Elementary School, Grades 1-4; Oceanography; The Role of Law in a Space Age Society; Astronautics (Electronics VI); Up the Down Computer; Newton's Three Laws of Motion for the Third Grade, and others.

Evaluation

General Learning Corporation and later an evaluation consultant from the University of Southern Nevada assisted teachers and the director in the development of evaluation measurements to analyze how new data and new activities affect student learning. Detailed records have been kept to measure the objectives of student seminars, enrichment classes, and mobile laboratory programs. Data collected indicated that behavioral objectives were met, science and math offerings were successfully updated. and effective course enrichment has taken place.

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NOVATO HIGH SCHOOL

Novato Unified School District
Attention: Stanley Onderdonk, Principal
Col Walter Van Emon, USAF (Ret)
Aerospace Education Instructor
625 Arthur St.
Novato, California 94947
Telephone: (415) 897-4224

Program Began: 1966

Current Enrollment: 107 (5 of whom are girls)

The Novato High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

At Novato High School, aerospace education is that branch of general education concerned with communicating knowledge, skills, and attitudes about aerospace activities and the total impact of air and space vehicles upon society. It must be distinguished from those branches of special education known as aeronautical and/or astronautical education which are concerned with training specialized aerospace workers.

In response to a request for information about the cost of the program compared with chemistry and English, the Novato High School Principal provided the following:

1. Textbooks and Supplementary Texts

Aerospace	- No cost, because they are furnished by the Air Force
Chemistry	- Approximately $11 per student
English	- Approximately $8 per student

Lt. Col. Walter C. Van Emon, Aerospace Education Instructor at Novato High School, shows a cadet the details of an F-106 flight simulator at Hamilton Air Force Base. The California 11th Air Force Junior ROTC Detachment at the school has been "adopted" by the 84th Fighter Interceptor Squadron at Hamilton.

Air Force Photo

2. Consumable Supply Money

Aerospace - $20 per class, 5 classes @ $20 per class = $100
Chemistry - $65 per class, 4 classes @ $65 per class = $260 (other science classes also get $65 per section)
English - $20 per class, 48 classes @ $20 per class = $960

3. Capital Outlay

Aerospace - Nothing. They have received surplus equipment and Air Force equipment at no cost to the program.
Chemistry - The Science Department received $840 this year but has received much more in the past. The money is assigned according to where the need is the greatest. Lately, most of it has been going to the Industrial Arts department.
English - Rarely do they receive money, but when they do it is usually for drama or remedial reading equipment. This year they received $450 for drama.

4. Audio-Visual

Aerospace - The Air Force has given Aerospace Education a projector and screen. Aerospace can also get Air Force, Navy, Army, and Marine films at no cost.
All Other Departments Including Chem. & Eng. - The other departments of the school share our Audio-Visual equipment purchased by the district. The district contracts with the office of the Marin County Superintendent of Schools for films.

5. Field Trips

Aerospace - The Aerospace program is allocated $600 for transportation. They rarely ask for district transportation.
All Other Departments - All other departments, including Chemistry and and English, must rely upon district transportation.

It is of interest to note that Novato High School recently was commended by Congressman Don Clausen for its Aerospace Education graduates having received coveted military Congressional appointments. Novato has the distinction of having aerospace students appointed to the Air Force Academy at Colorado Springs, the Military Academy at West Point, and other service academies.

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O'CONNELL VOCATIONAL HIGH SCHOOL AND TECHNICAL INSTITUTE
San Francisco Unified School District
Attention: Bryant Lane, Principal
135 Van Ness Ave.
San Francisco, California 94102
Telephone: (415) 863-4680

Program Began: 1939

Current Enrollment: 170 (day and evening)

Detailed description of course not available.

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PALM SPRINGS HIGH SCHOOL
Palm Springs Unified School District
Attention: Dennis LeRoy Anderson
Principal Ground Instructor
2248 E. Ramon Rd.
Palm Springs, California 92262
Telephone: (714) 327-1421

Program Began: 1969

Current Enrollment: 100

Palm Springs High School is one of only a few schools in California that have been granted the Air Agency Certificate from the U. S. Department of Transportation (WE-8-4). The aviation program at Palm Springs High School is operated under the leadership of Dennis Anderson, who holds the Commercial Pilot's Certificate with an Advanced Ground Instructor's rating and the State Department of Education Standard Designated Subjects Teaching Credential-Aviation Ground Instruction: Basic Number 6451DSL.

The purpose of the aviation science program is to introduce the student to occupational opportunities in the aerospace industry and to provide him with the basic information necessary to qualify him for a pilot's license. The program is structured academically as follows:

1. Aeronautical knowledge of airplane flight
2. General information about aviation, including aerodynamics, meteorology, FAA regulations, navigation, and computer operations

The instructor reports that a number of parents have commented favorably about the program by indicating that their youngsters' interest in aviation "is providing a stabilizing force for them in developing mature attitudes."

Mr. Anderson is able to draw from a wide background of experience in aviation which includes the fact that he presently is also working as Chief Pilot of a Burbank-based advertising firm. He is also the Commander of the Civil Air Patrol Squadron 108 of Palm Springs.

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PALO ALTO HIGH SCHOOL
Palo Alto City Unified School District
Attention: Maynard Brown
Aerospace Education Instructor
50 Embarcadero Rd.
Palo Alto, California 94301
Telephone: (415) 327-7100

Program Began: 1946

Current Enrollment: 170, day and evening

Course Title: Day - Aerospace I, II, III
Evening - FAA Approved Powerplants, Airframe and Powerplant Refresher Course

Aerospace I

A general survey, including a brief history of aviation and the space age; social effects of aviation, rockets, and missiles; problems of flight, weather, navigation, and air traffic control; fundamentals of aircraft powerplants and airframe structures; and vocational opportunities in aviation, rocket, and missile industries. A Link trainer will be available. Actual flight time will be provided the student by an outside agency at currently prevailing costs. Students enrolled are eligible to join Paly Flying Club for further flight experience. Field trips to naval air stations, commercial airlines, aeronautical colleges, and FAA installations are taken throughout the year.

Aerospace II

Aero II includes the following course options or sections: Commercial Pilot, Instrument Pilot, Flight Instructor, Airframe (IA), Powerplant (IA), and FAA Approved Powerplant (Voc. Ed.). Course options or sections for FAA Ground Instructors (Basic, Advanced, and Instrument) also are now offered.

Aerospace III

Aero III offers advanced work in the same options or sections as Aero II.

The graduates of Palo Alto High School are employed in many aerospace and/or aviation occupations. Approximately 80 percent of those that graduate go on to a two or four year college. Twenty percent go to work in the field of aerospace or aviation.

A 1969 graduate of this three-year program had a diploma in one hand and a job (flight instructor) in the other--an 18-year old who really was proud of his accomplishments--and the school was indeed proud of him. He had taken Aero I, II, and III. In Aero II and III he elected to study the following options or sections: Commercial Pilot, Instrument Pilot, and Flight Instructor. Upon graduation he had earned an FAA Commercial Pilot's License and a Flight Instructor Rating and had passed the FAA Instrument written examination. He is now enrolled in a four-year college and while continuing his own education is also instructing flight students. Another day-school student received the FAA Powerplant Mechanic's License, after finishing the FAA approved powerplant course at Palo Alto High School, and is employed by a major airline.

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PERRIS UNION HIGH SCHOOL DISTRICT
Attention: Myrl C. Rupel, Superintendent
1456 N. Perris Blvd.
Perris, California 92370
Telephone: (714) 657-5138

Program Began: 1971

Current Enrollment: 20

At the present time, the Perris Union High School District offers a course in stewardess training for 10th, 11th, and 12th grade girls. An airline stewardess with many years of experience as a stewardess and as a teacher of airline information is working with approximately 20 girls this semester. The purpose of the course is not only to give basic airline stewardess training, including charm, serving, and airline regulations, but, in addition, includes information which would allow the girls to become ticket agents or to run a travel bureau. They learn to read and interpret schedules.

The purpose of the course as described by the Superintendent is to "make young ladies out of our girls." It is not necessarily anticipated that they will become airline hostesses.

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PLEASANT HILL HIGH SCHOOL
Mt. Diablo Unified School District
Attention: Lyle Palmer, Aviation Instructor
3100 Oak Park Blvd.
Pleasant Hill, California 94523
Telephone: (415) 934-6746

Program Began: 1954

Current Enrollment: 55

The aerospace curriculum at Pleasant Hill High School consists of a one-year course which covers the history of aviation, nomenclature and recognition, theory of flight, powerplants, effects of flight on the human body, meteorology, navigation, airports and airways, and occupational opportunities.

Laboratory facilities include a Link trainer in which each student receives at least six lessons of 20 minutes each in the basic fundamentals of flight. At the present time they are engaged in an outside work experience program in which above average students are given the chance to actually work on aircraft at the local airport, Buchanan Field. They are also beginning an aeromechanics course.

The basic textbook in use in the aviation program at Pleasant Hill High School is Jeppesen's Programmed Material. Other texts and references used include:

1. Aviation Study Manual--CAP
2. Introduction to Aviation--Air University, AFROTC
3. Introduction to Aerospace--CAP
4. Aircraft in Flight--CAP
5. Airports, Airways and Electronics--CAP
6. Navigation and the Weather
7. The Problems of Aerospace Power--CAP

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PLUMAS UNIFIED SCHOOL DISTRICT
Attention: Floyd E. Warren
Secondary Consultant
P. O. Box 330
Quincy, California 95971
Telephone: (916) 283-2200

See descriptions for Chester, Portola, and Quincy High Schools

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PORTOLA HIGH SCHOOL
Plumas Unified School District
Attention: Glynn B. Lee, Principal
P. O. Box 1175
Portola, California 96122

Program Began: Spring, 1969

Current Enrollment: 12

The aviation education program at Portola High School uses Sanderson educational and audio-visual materials. The course content covers preflight, meteorology, flight computer, navigation, radio navigation, aircraft radio communications, instruments and systems, and federal aviation regulations.

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Chester, Portola, and Quincy High Schools provide instruction for prospective aviation mechanics and pilots.

The aviation program includes a flight indoctrination course in a Cessna 150 aircraft. Flight training consists of 30 minutes each month for 10 months. Cost of flight training is borne by the Plumas Unified School District. The purpose of flight training is threefold: (1) to motivate the students; (2) to make their aviation education more meaningful; and (3) to provide impetus for students to continue flight training using their own financial resources.

In addition, Portola High School offers Aviation Mechanics, which is a basic mechanics course covering assembly and disassembly of engines, flight testing, and general mechanical procedures for aircraft.

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QUINCY HIGH SCHOOL
Plumas Unified School District
Attention: **Charles D. Farris**
Aviation Instructor
P. O. Box D
Quincy, California 95971
Telephone: (916) 283-0200

Program Began: Spring, 1969

Current Enrollment: 10

The description for the aviation education program at Quincy High School is the same as that for Portola High School (above), except that Aviation Mechanics is not offered at this time.

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RAVENSWOOD HIGH SCHOOL
Sequoia Union High School District
Attention: Joan Doyle
Aviation Instructor
2050 Cooley Ave.
East Palo Alto, California 94303
Telephone: (415) 369-1412

Program Began: September, 1970

Current Enrollment: 25

This course was developed cooperatively by the Aviation Instructor at Ravenswood High and Mr. Jean LaLanne, Industrial Arts Chairman at Menlo High in the same school district. The efforts of both schools are closely synchronized to permit sharing of speakers and films, thus cutting cost of the program for the district. In addition, the same bus is shared for field trips. For a complete account of the program and activities participated in by both schools, see the Menlo Atherton High School description.

Although courses at Menlo Atherton and Ravenswood are synchronized, the method of teaching students differs for several reasons. Approximately 97 percent of the Ravenswood students are black and of a low income level; they have had little, if any, exposure to flying; and many of the students read below grade level. It has been found necessary to teach the course using reading teaching skills. Assigned reading material is reinforced with filmstrips and cassettes which follow chapter materials. This gives auditory and visual reinforcement to difficult reading material. Subject matter is further clarified by verbal examples and use of the blackboard and other visual aids such as magnetic boards and overhead projections.

The instructor at Ravenswood holds a private pilot's license and is working on an instrument rating. ("Ideally," she states, "an instructor should hold a private pilot's license, and instrument and ground instructor's ratings.") It was the good fortune of the first aviation class at Ravenswood to have assigned to it as a teacher's aide a licensed jet mechanic and air race pilot. The students related very well to him, as he "spoke their language" and earned their respect. The fact that his AT6 was named "My Sin" delighted the students.

The first class originally had 20 students and ended with eight. Natural attrition took most. Only two found themselves in over their heads. Three of the remaining eight planned to take the FAA private pilot written examination during the following summer. Two of these young men continued to have difficulty with reading but were willing to spend many hours reading the material in order to pass the examination. Besides giving the students an opportunity to fly and to prepare for the FAA written examination, the program has given them identity, motivated them to read, and given exposure to the broad vocational field that aviation encompasses.

In the final analysis, the worth of any teaching effort can be assessed only by the degree to which it achieves acceptance and understanding by those taught. One of the most rewarding aspects of this program is the pride with which the students view their accomplishments in the course.

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REDLANDS HIGH SCHOOL
Redlands Unified School District
Attention: Kenneth R. McClellan
Instructor, Science Department
840 E. Citrus Ave.
Redlands, California 92373
Telephone: (714) 793-2251

Program Began: 1968

Current Enrollment: 20

The Redlands aviation program is offered through adult education. However, regular day students are permitted to take the course for credit. The course consists of the normal ground school subject matter and is designed to prepare the student to pass the FAA written examination for pilots. No flight training is available. Some field trips are made to local facilities.

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REDONDO HIGH SCHOOL
South Bay Union High School District
Attention: Charles Morris, Principal
Ted G. Misenhimer, Aviation Educator
631 Vincent Park
Redondo Beach, California 90277
Telephone: (213) 379-5421

Program Began: 1956

Current Enrollment: 120

Aero science at Redondo High School consists of a two-semester laboratory science course designed to provide students with an overview of air transportation, the history of aviation, aeronautical science, and the preflight knowledge required of a pilot. Included also are studies and laboratory experiences associated with basic aeronautics (theories of flight forces during flight, aircraft stability, engines, propellers, instruments, etc.); meteorology; navigation; and flight indoctrination.

The flight indoctrination consists of two hours of flight in a Cessna-type aircraft as an integral part of the laboratory instruction. Navigation, meteorology, radio procedure, omni, etc., are demonstrated and put to practical use. The orientation flight experience is not designed to make pilots out of the aero science students but to create a better understanding of the importance of aviation in our modern technology and transportation systems. Costs for the flight experience are borne by the Long Beach Chapter of the Ninety-Nines. Laboratory facilities used in the course include a Link flight simulator in which the student duplicates control movements of an aircraft in flight. Each student will have at least four flights of 15 minutes each in the trainer during the year for the purpose of discovering the intricate factors involved in successful instrument flight operations.

Ten students are currently engaged in taking flight instruction at their own expense from fixed base operators at Torrance Airport. The school is concerned only with coordinating the ground instruction with the flight training and in no way assumes any cost or responsibility for the flights. All these students will be prepared to take the written portion of the FAA private pilot examination by the end of the school term, and many of them will be qualified for the flight test. The Redondo graduates who have taken the aero science course have been employed in many aviation occupations, including the U. S. Navy, U. S. Air Force, North American Aviation Company, Douglas Aircraft Company, United Airlines, NASA, and many more.

A second year of aero science offers the student airplane repair experience and an opportunity to work part time in several aerospace agencies under the Cooperative Improvement Program. Some of the primary benefits derived from the aero science course that can be used to fulfill the laboratory science requirement for nonscience majors include the high motivation of average and poor academic students who normally find it difficult to become interested in college preparatory subjects.

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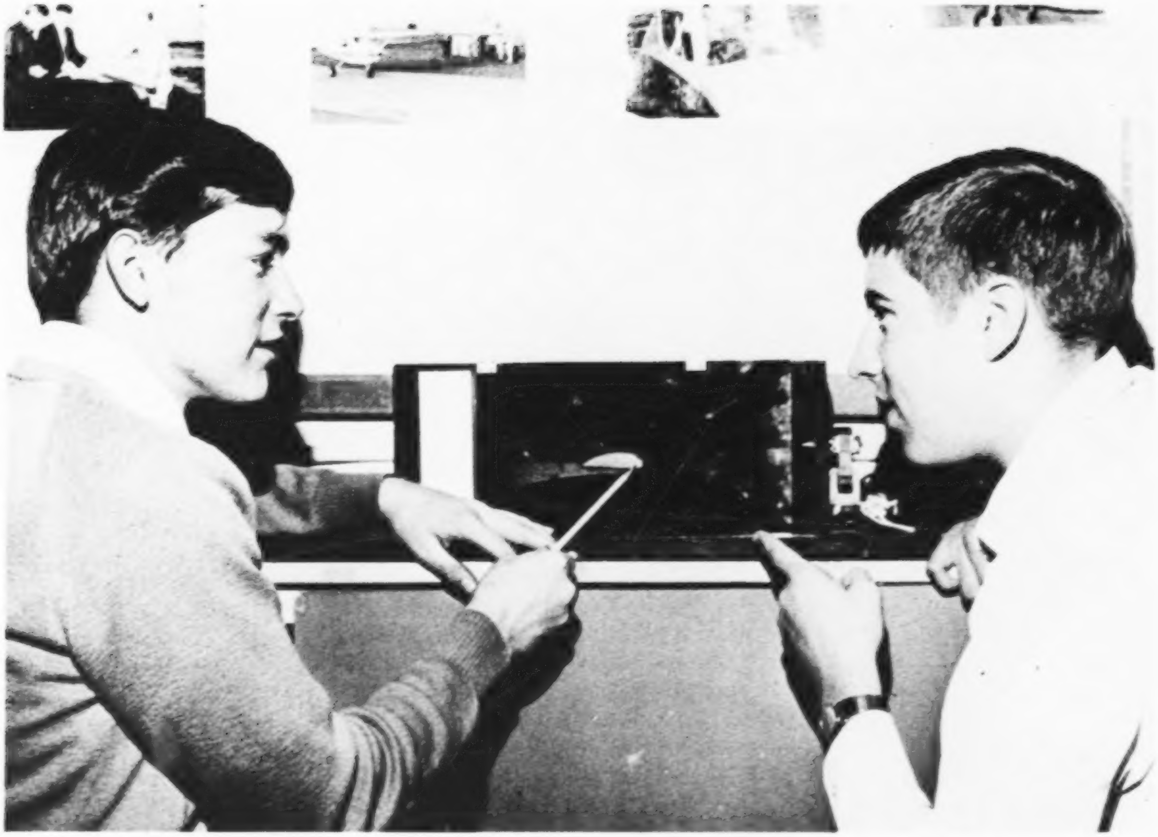
Prior to take-off, Redondo High School Instructor T. G. Misenhimer explains cockpit procedure to students preparing for their orientation flight.



Redondo High School students found the study of aerodynamics to be essential to their understanding of how their Cessna 150 flies. Here they examine a student-constructed wind tunnel.

RICHMOND UNIFIED SCHOOL DISTRICT
Attention: Robert J. Mullen, Coördinator
Special Projects and Counseling
1108 Bissell Ave.
Richmond, California 94802
Telephone: (415) 234-3825

Program Began: September, 1967

Program Suspended: 1971--for lack of funds

Although no longer funded, this program proved the wisdom of aviation education to the satisfaction of the Rosenberg Foundation, many parents, and a sociologist on the staff at the UC-Berkeley Survey Research Center.* It is, therefore, included for the reader's information.

This was basically an academic instructional program that made use of the ideal environment and tools of aviation. It was started in 1967 at Roosevelt Junior High School in the heart of the Richmond inner city. The primary purpose was to determine the effectiveness of flight and aviation in altering the failure and alienation patterns of underachievers and potential dropouts. A careful evaluation has indicated a high degree of effectiveness.

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*FLYING Magazine, December 1971. PP. 54-56.

During the last three years the project was moved to the John F. Kennedy High School, Richmond. The development of an interdisciplinary four-year high school curriculum was accomplished with very meager resources. The approximately 50 students in the program each year were in grades 9 and 10. Their academic day was planned around flight and aviation technology. Subjects included in the complex were mathematics, aero lab, science, social science, and English. Flight instruction was an integral part of this program. Each student received approximately 10 hours of dual flight instruction spaced over the entire year.

The Richmond Unified-Rosenberg Foundation Aviation Program was probably the best example of aviation education in which foundation money has been used to help further the objectives of aviation education.

> The Roosevelt Flight Project, which received two Rosenberg Foundation grants totaling $25,855, is the brain child of Robert Mullen, a World War II flier who is now coordinator of special projects and counseling for the Richmond School District. Mr. Mullen believes (as do many others) that many Negro youths from poor families do badly in academic work primarily because of their low self-images, not because of sheer lack of ability; and that many of the compensatory education programs now under way simply reinforce their view of themselves as failures. He reasoned that one way to counteract this feeling was to engage the boys in an activity that is of obviously high status--and flying is certainly that to most teenage boys.*

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SACRAMENTO COUNTY REGIONAL OCCUPATION CENTER
Attention: David Montague
Director of Vocational Education and
Regional Occupation Center Programs
John D. Sellers
Chairman, Aviation Department
6011 Folsom Blvd.
Sacramento, California 95819
Telephone: (916) 454-2821

Program Began: 1970

Current Enrollment: 130

The course of instruction in the Aviation Department at the Sacramento County Office of Education's Regional Occupation Center was designed to prepare high school seniors for entry into the vast area of the aerospace industry which is open to the unlicensed technician. Hundreds of thousands of these technicians are employed in military installations, airline shops, and manufacturing plants throughout the world. Their duties and qualifications are rarely com-

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*Rosenberg Foundation Annual Report, 1968.
Source: Rosenberg Foundation, 210 Post Street, San Francisco, CA 94108

parable to the general aviation, airframe, and powerplant mechanic. Unlike most aviation courses, which offer curriculum leading to FAA certification, the emphasis of this program is toward entry at the helper or trainee level in the typical depot, overhaul facility, or assembly plant.

The course offers the student "on the job training" by fully qualified technicians to qualify him for the working world. The program does not consider training the student to fully qualified technician status as within either its capability or its intent. On the other hand, the knowledge, manipulative skill, and insight he will have gained will better prepare him to make an empirical career decision and to competitively enter the employment market than he could have hoped for, given the normal academic preparation.

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SAN ANTONIO HIGH SCHOOL
Claremont Unified School District
Attention: Norman J. Taylor, Principal
Donald Patterson
Aviation Instructor
545 Colby Circle
Claremont, California 91711
Telephone: (714) 624-9041

Program Began: 1969

Current Enrollment: 12

COURSE TITLE: INTRODUCTION TO AVIATION

This course acquaints the student with technical phases of flight through classroom activities and visits to airports and other aviation facilities. Inexpensive flights may be arranged outside of school hours with local flight schools. In addition, the history of aviation and the social and economic implications of aviation will be examined.

OBJECTIVES

1. To acquaint the student with technical aspects of flight
2. To permit the student to assess himself as a potential pilot
3. To acquaint the student with vocational and avocational opportunities

COURSE CONTENT

1. Physics of flight
2. Air traffic control
3. Aviation meteorology
4. Air navigation
5. Radio communications
6. Airman's physiology
7. Aircraft performance and operation
8. History of aviation
9. Vocations in aviation
10. Federal air regulations

METHODS AND TECHNIQUES

1. Lecture discussion
2. Assigned reading
3. Airport facility visits
4. Demonstration flights
5. Audio-visual materials

EVALUATION

1. Attendance and participation
2. Completion of assignments
3. Command of information as reflected in discussions, reports and examinations
4. Demonstration of interest reflected in voluntary activity such as supplementary flights, pursuit of flight training, and continued airport facility visits.

TEXTS

Private Pilot's Handbook, U. S. Government Printing Office. 1965.

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SAN MATEO COUNTY BOARD OF EDUCATION
REGIONAL TRAINING PROGRAM (Three high schools)
Attention: Lee M. Baxter, Director
Jim Smith, Instructor
703 Bradford St.
Redwood City, California 94063
Telephone: (415) 369-1441, ext 2545

Program Began: 1969

Current Enrollment: 100

The air transportation course is sponsored by the Regional Training Program, San Mateo County Board of Education, in three high school districts within San Mateo County. Classes meet daily at Crestmoor High, San Bruno, in the San Mateo Union High School District; South San Francisco High, South San Francisco, in the South San Francisco Unified High School District; and Jefferson High School, Daly City, in the Jefferson Union High School District. Students from other high schools within the county may attend classes at one of these high schools. Inasmuch as the air transportation class is conducted by the County Board of Education with a mobile instructor (making extensive use of the Sanderson materials), it is open to all San Mateo County junior and senior high school students who display an interest in aviation.

The program is a two-semester course dealing with air transportation and the aircraft industry from both operational and vocational viewpoints. Students are given classroom training in aerodynamics, aircraft performance data, weight and balance, use of the aviation computer, navigation, radio communication and radio navigation, familiarization with aircraft instruments, federal aviation regulations, and meteorology. The districts provide one brief orientation flight of about 30 minutes for all students. Voluntary flight experience conducted on the students' own time and at their own expense is arranged through local flight school operators. Saturday simulator training, using the flight simulators at the College of San Mateo, is also available without charge to all students. In addition to the preflight and simulator experiences, the program includes studies in basic airframe and powerplant units as well as an introduction to accessory systems.

Classroom time is also devoted to vocational education as it pertains to the aircraft industry. This acquaints students with the available jobs and job requirements which are in today's employment market. Discussion of employment procedures and practices is included in an effort to prepare those enrolled with the background and techniques of counseling specialists on the

County's Career Information and Planning Service staff. Air transportation students are given the opportunity to seek assistance in selecting and actually securing employment.

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SANTA ROSA HIGH SCHOOL
Santa Rosa City High School District
Attention: Allan Morgan, Aeronautics Instructor
1235 Mendocino Ave.
Santa Rosa, California 95401
Telephone: (707) 528-5291

Program Began: 1967

Current Enrollment: 30

The primary objective of the aviation course at Santa Rosa High School is to familiarize the students with the different facets of aviation, such as principles of flight, navigation, meteorology, and so forth, and with the many vocational aspects related to aviation: e.g., traffic control, NASA, and aircraft maintenance. This is accomplished through student activities and student involvement in firsthand experiences, and by using guest speakers and supplementary films in studying flight-related topics. The instructor emphasizes the fact that the course "is NOT a pilot training program--commonly referred to as a 'ground school'."

COURSE OUTLINE

Part I

1. Introduction to Aviation
    - Historical background
2. Science of Aviation
    - Physics of flight
    - Aircraft and engine operation
    - Aircraft performance
4. Navigation
    - Sectional charts
    - Flight computer
    - Aircraft radio & VOR
    - Preflight planning
    - In-flight activities
5. Meteorology
6. FAA Regulations (FAR)
7. Flight Instruments
8. Flight Information Publications
    - AIM
    - Airport directory
9. Vocational Aspects
    - Air traffic control and FAA
    - Aircraft maintenance
    - General aviation
    - Ground based operators
    - NASA-Space
    - Agricultural uses
    - Commercial aviation

Part II

1. Guest Speakers
    - FAA
    - General aviation
    - Commercial aviation
    - NASA
    - EAA
    - CAP
    - Air traffic control
2. Activities
    - Field trips
    - Student projects
    - Flight computer uses
    - Chart reading
    - Sequence reports analysis
    - Navigation problem solving
    - Supplementary films

Sources, reference materials, and the names of films used in this course are too numerous to list on this outline; however, they are available upon request.

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SEASIDE HIGH SCHOOL
Monterey Peninsula Unified School District
Attention: Robert DeWeese
Assistant Principal-Curriculum
Warren Hints, Aviation Instructor
P. O. Box 1031
Monterey, California 93940
Telephone: (408) 649-7011

Program Began: 1968

Current Enrollment: 30

NOTE: A similar description of the Aviation Science course is available from Montery Peninsula Unified School District.

I. COURSE TITLE: AVIATION TECHNOLOGY

II. GRADE LEVEL: 11, 12

III. COURSE CLASSIFICATION: Regular

IV. COURSE LENGTH: One Year

V. CREDITS: Five per semester. Variable credit may be granted on the basis of learning objectives achieved pursuant to the "content equivalent" provision of Section 1601, Administrative Code, Title V.

VI. PREREQUISITES AND GUIDANCE INFORMATION: No prerequisites. The course is recommended for students with special interest in aviation and related fields.

VII. EDUCATION CODE SECTION AND/OR DISTRICT GOAL: Course meets the requirements of Education Code 8571 (h). This course is intended to provide career information and motivation pursuant to the MPUSD Goal of Economic Competence for its students.

VIII. COURSE DESCRIPTION: This course is intended to acquaint students with the history and economics of aviation and the areas of study related to the flight, maintenance, and commercial uses of aircraft. The science of airborne and space flight is included, together with exposure to careers related to these fields. Classroom instruction is supplemented with actual flight experience and field trips.

IX. COURSE CONTENT:

A. History and economics of aviation
B. Aerodynamics
C. Weather and meteorology
D. Airplane operation and performance
E. Airplane instruments
F. Navigation
G. Airman's information manual and federal aviation regulations
H. Space technology
I. Career opportunities in aviation and space technology fields

X. COURSE GOALS AND OBJECTIVES:

A. Course Goals:
- To introduce students to the family of jobs related to aviation and space careers
- To acquaint students with the history of aviation, the principles involved in its development, mechanical operation, and flight characteristics of aircraft and spacecraft

MONTEREY PENINSULA

Monterey Airport is an educational laboratory with unlimited possibilities where Seaside High School students learn about aviation careers and fly, through the courtesy of an anonymous patron of the school -- proof that relevance is vital in the learning process.

B. Learning Objectives:

Unit A History and Economics of Aviation (1 credit)

- All students will demonstrate knowledge of the following on a written test:
  - Contributions of: da Vinci, Montgolfier Brothers, Cayley Lilienthal, Langley, Wright Brothers, Lindberg, Mitchell, and Fokker
  - The sequence of aircraft development: balloons, gliders, dirigibles, piston power, jet engine types
  - The sequence and significance of notable flights and their pilots' names
  - Types of aircraft and their uses: military, business, agriculture, private, public, cargo
  - Types of spacecraft and their uses: communications, weather survey, espionage, space research
  - Spinoffs from aerospace technology
  - Contributions to aviation from World War I, World War II
  - Contributions to U. S. economy by aerospace manufacturing, general aviation, and air transportation
- All students will demonstrate their ability to interpret economic graphs related to aviation economy.
- All students will demonstrate their ability to locate information related to aviation in standard library references.
- All students will make an oral presentation on an aviation topic of their choice, including information from library research.
- All students will be able to verbalize an appreciation of historical contributions to aviation relative to the conditions at that time in history.
- All students will be able to demonstrate an understanding of the need for a basic foundation in aerodynamics for anyone connected with aviation.
- Students choosing to participate will experience flight in a small plane accompanied by explanation of procedures, devices, and so forth.

Unit B Aerodynamics (1 credit)

- All students will demonstrate knowledge of the following on a written test:
  - Parts of an aircraft
  - Aircraft wing-types
  - Components of aircraft construction
  - Location and function of controls
  - Aerodynamic terminology (forces, airfoil surfaces, and so forth
  - Flaps, slats, slots (draw and identify)
  - Weight-balance terminology
  - Propeller types
- All students will demonstrate an understanding of:
  - Concepts of interplay of aerodynamic forces
  - Effects of flaps, slats, slots on aerodynamic forces
  - Behavior of air in subsonic, transonic, and supersonic flight

  - .Trim tab system operation
  - .Weight-balance relationships
  - .Propeller function and variation according to type

- . All students will demonstrate ability to locate and use resource materials related to weather.

- . All students will demonstrate the ability to read and interpret teletype weather data.

- . All students will demonstrate skill application by:
  - .Applying vector graphing to compute aerodynamic forces
  - .Computing aspect ratios
  - .Solving problems using formulas relating to inertia, mass, pressure, power, relative motion, and work
  - .Using vector diagrams to compute aerodynamic forces in a turn
  - .Solving weight-balance problems using graphic method, computation method, and slide rule method

- . All students will demonstrate the ability to analyze and interpret aerodynamic graphs.

- . All students will analyze the uses of basic machines in aircraft control systems.

- . Students electing to fly will be able to approach to stall, stall, and recover from stall in flight.

- . Students electing to fly will experience the effects of weight-balance shifts in flight.

- . All students will visit aeronautical engineering labs and see wind tunnel demonstrations with models.

Unit C Weather Meteorology (1 credit)

- . All students will demonstrate knowledge of the following on a written test:
  - .Source regions of air masses
  - .Cloud types
  - .Weather map symbols
  - .Fog types
  - .Weather front symbols

- . All students will demonstrate understanding of:
  - .Effect of general circulation, temperature, and wind on weather
  - .Interrelationships between temperature, humidity, dew point, lapse rates, stability, and water vapor
  - .Effects of local conditions on weather
  - .Weather fronts
  - .Jet stream

- . All students will be able to predict the results of weight changes in aircraft loading.

- . All students will demonstrate ability to interpret weather maps.

- . All students will produce a weather map from data and develop weather predictions from data.

- All students will design appropriate flight routes based on weather data.

- All students will demonstrate the attitude of respect for weather and its effects on aircraft. through their conversation and behavior.

- Students electing to fly will experience varying weather conditions in flight.

Unit D Airplane Operation and Performance (1 credit)

- All students will demonstrate knowledge of the following on a written test:
  - .Different types of engines
    - a. Reciprocating
      1. Enline
      2. Vee
      3. Horizontally opposed
      4. X type
      5. Inverted vee
      6. Radial
    - b. Jet
      1. Centrifugal flow
      2. Axial flow
      3. Ramjet
      4. Pulse jet
    - c. Rocket

- All students will demonstrate on simulation and/or actual practice the procedures for:
  - Preflighting an aircraft
    1. Engine starting
    2. Engine idling
    3. Engine ground check
    4. Burning out loaded up engine
    5. Securing engine

- All students will demonstrate an understanding of the general principles of the following aircraft systems:
  1. Fuel
  2. Electrical
  3. Oil
  4. Hydraulic
  5. Carburetion
  6. Supercharging
  7. Propeller
  8. Compressor
  9. Turbine
  10. Afterburner

- All students will demonstrate under actual conditions:
  1. Engine idling
  2. Engine ground check
  3. Burning out loaded up engine
  4. Securing engine

- Students electing to fly will call for weather information from the aircraft in flight and apply the data to navigation.

- All students will show behavior indicative of an attitude of safety consciousness in the operation of an aircraft engine and related systems.

Unit E Airplane Instruments (1 credit)

- All students will demonstrate understanding of the following on a written test and in practice:
  - The purpose and function of the following instruments or systems:
    1. Magnetic compass
    2. Outside air temperature gauge
    3. Air speed indicator
    4. Rate of climb indicator
    5. Altimeter
    6. Gyro horizon
    7. Directional gyro
    8. Turn and slip indicator
    9. Tachometer
    10. Pitot-static system

- Those students electing to fly will demonstrate appropriate use of the above named instruments or systems.

- All students will analyze errors that occur in the use of a magnetic compass during turns, acceleration, and deceleration, in a written test.

- All students will analyze errors that occur in an air speed indicator due to density change, temperature change, and compressibility on a written test.

- All students will analyze altimeter errors due to pressure change and temperature change on a written test.

Unit F Navigation (2 credits)

- All students will demonstrate understanding of the following on a written or oral test:
  - The system of latitude and longitude for designating a position
    - The major types of map projection
    - How a compass designates direction by degrees
    - How to plot courses and distances on a chart
    - How to compute G.S., T.A.S., T.H., C.U.S., and wind vectors using a wind triangle on graph paper
    - How to compute the following on the E6B computer.
      - (a) C.U.S. (Course)
      - (b) G.S.
      - (c) T.H.
      - (d) T.A.S.
      - (e) Wind
      - (f) I.A.S.
      - (g) Altitude
      - (h) Fuel consumption
    - How to properly complete a navigation log

- All students will be able to locate and translate from resources the meaning of all symbols used on a sectional or regional aerodynamic chart.
- Students electing to fly will navigate a 3-hour flight to within visual sighting of each checkpoint, and within 3 minutes of predicted arrival time for each checkpoint.
- All students will demonstrate through conversation and behavior the attitude of valuing accurate preplanning navigation for flights.
- Students choosing to fly will experience a cross-country flight of 3 hours' duration.

Unit G Airman's Information Manual and FAA Regulations (1 credit)

- All students will demonstrate knowledge of the following on a written test:
  - Rules of right-of-way of aircraft on the ground and in the air
  - Tower light signals
  - Rules for operation of aircraft at an airport with tower control
  - Rules for operation of aircraft at an airport without tower control
  - Rules for operation of an aircraft under visual flight rules conditions
  - Runway marking and designations
  - Taximan hand signals
  - General content of each of the three parts of the Airman's Information Manual
- All students will be able to locate and relate from resources the following:
  - Meaning of all aeronautical terms in Part I of A.I.M.
  - Any requirements pertaining to basic fundamentals that are published in Part I of A.I.M.
  - Facilities available at any airport in the U.S. from Part II of A.I.M.
  - NOTAMS for any particular area in the U. S. from Part III of A.I.M.
  - Graphic notices for any particular area from Part IV of A.I.M.
  - Any information concerning VFR general operating rules from F.A.R. Part 60
- All students will demonstrate the ability to interpret information from the Airport Legend by use of the key in Part II of the A.I.M.
- All students will demonstrate the ability to use and apply data from A.I.M. Parts I-IV and F.A.R. Part 60 to plan VFR procedures for a 3-hour navigation flight landing at another airport.

Unit H Space Technology (1 credit)

- All students will demonstrate knowledge of the following on a written test:
  - Sequence of space exploration accomplishments and general

  - time frame of accomplishments
  - Order of arrangements of planets in solar system
  - Meaning of names of all types of natural occurring bodies and groups of bodies in space
  - Uses for all different types of satellites and NASA rocket programs
  - Types of rocket propellants in use
  - All terms connected with satellite programs

- All students will be able to compute force, mass, and acceleration, using Newton's laws.

- All students will demonstrate understanding of the following on a written test:
  - Basic principles of orbiting satellites
  - Basic principles of rocket propulsion
  - Basic principles of force and acceleration in space

Unit I Career Opportunities in Aviation and Space Technology Fields (1 credit)

- All students will be able to locate information related to:
  - Four aviation-related careers suited to each of individual student's primary aptitudes. (Also all related school subjects.)
  - Four aviation related careers suited to each of individual student's secondary aptitudes. (Also all related school subjects.)
  - Four aviation-related careers suited to each of individual student's third-rated aptitudes. (Also all related school subjects.)

- All students will develop and deliver a five-minute oral report on one of the following topics or a related topic by teacher approval. They will also hear the reports of the other students.

  Topics: Nonpilot aviation careers
  Aircraft maintenance careers
  Airline flight service careers
  Aviation in government careers
  Airport careers
  Pilot careers
  Air traffic control careers

- All students will view:
  - Sound slides presentation, "Aviation Career Opportunities Are Bright"
  - Film, "Aviation Mechanic"

C. Instructional Objectives:

- The teacher will use a multimedia approach.

- A variety of materials will be used and compared as to effectiveness in facilitating student learning.

- The textbook shall be treated as one of many learning resources or reference materials.

- Career planning shall be encouraged.

- Help will be given to students in locating and applying for jobs in air-space fields and/or encouraging further schooling which would lead to later job placement.
- Instruction shall include field trips, guest speakers, laboratory activities, and flight experience.

XI. EVALUATION:

A. Student achievement will be evaluated on the basis of learning objectives achieved.

B. Evaluative methods will include written tests, written and oral reports, and flight and laboratory observations.

C. Program evaluation will include input from the Area Advisory Committee.

D. Program evaluation will include input from student follow-up studies.

XII. INSTRUCTIONAL RESOURCES:

Human Resources
Student aides are helpful in multimedia and clerical services and tutorial assistance.

Material Resources
Airplane (including maintenance costs)
Films (many commercial)
Model kits
Navigation equipment (plotters, charts, computers)
Physics lab equipment (balances)
Basic flight instruments--demonstration sets
Airman's Information Manual, Parts I, II, III, Superintendent of Documents, U. S. Government Printing Office
Aviation Weather, FAA, Superintendent of Documents, U. S. Government Printing Office

Time Factors
Students wishing flight experience must be willing to give after-school time.

Facilities
Large flat tables are necessary for lab work and navigation exercises. An ideal facility would have space for a wingless aircraft.

Inservice Training
The instructor must be a licensed pilot.

Support Services
Aircraft maintenance and airport facilities
Field trip cooperation from Army, Navy, civilian airport facilities
Transportation to airport

The flight phase of this program has been supported through a yearly grant from a public-spirited citizen.

XIII. PROCEDURAL GUIDELINES:

A. Insurance must be provided for students participating in flight experience.

B. A parent letter is sent at the onset of the course to explain the course and the optional flight experience available.

C. Parental permission in writing must be obtained for flight experience.

D. Procedures for allowable transportation to the airport must be established with the students.

XIV. IDENTIFICATION DATA

Board Approval Date: November, 1971
Prepared by Warren Hintz
Date October 27, 1971
New Course______ Revision 1

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SERRANO JUNIOR HIGH SCHOOL
San Bernardino City Unified School District
Attention: Louis V. Montoya
Aerospace Education Instructor
3131 Piedmont Dr.
San Bernardino, California 92346
Telephone: (714) 862-0230

Program Began: 1970

Current Enrollment: 30

The aviation and aerospace program at Serrano Junior High School is an outgrowth of the teacher's experiences with aviation and aerospace education workshops at the national level in various communities. These courses focused attention on the "acute need for the inclusion of this most vital industry in our secondary curriculum."

The program actually began in 1967 at Fremont Junior High School (in the same school district) when the instructor organized a "space club" at the school. The current interest is in "space age technology" and one of the most interesting activities has been "model rocketry."

During the summer sessions of 1968 and 1969 at Fremont, one of the cosponsors of the club taught a course in space science centered around the space activities of the last decade, using model rocketry as a vehicle. Currently, the course being offered on an experimental basis is "aerospace technology." This began with a one-semester study of aviation including the design and construction of model gliders. The second semester is being devoted to space studies concentrating on a study of "space industry." The activity for the students will include a unique instructional program that will involve the hiring of "experts" (students) in every field of endeavor as relates to design, graphic representation, production, testing and flying of a space vehicle--"in our case, a model rocket."

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STAGG HIGH SCHOOL
Stockton City Unified School District
Attention: Maj Edward Schutzman, USAF (Ret)
Aerospace Education Instructor
1625 Brookside Rd.
Stockton, California 95207
Telephone: (209) 466-3911

Program Began: September, 1968

Current Enrollment: 169

The Stagg High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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TAHOE TRUCKEE HIGH SCHOOL
Tahoe Truckee Joint Unified School District
Attention: J. Donald Marks, Principal
J. C. VanValkenburg
Instructor, Aeronautical Science
P. O. Box 458
Truckee, California 95734
Telephone: (916) 587-3574

Program Began: 1968

Current Enrollment: 30

The Aeronautical Science program at Tahoe Truckee School is a one-year course utilizing as a text Fundamentals of Aeronautics, 1st ed. 1969, Sanderson Co., plus materials from Jeppeson and Aero-Research Associates. Materials occasionally used are the Coast and Geodetic Charts, FAA bulletins and charts, and other related media obtained from NASA and various aircraft companies.

The first semester consists of aircraft construction and types, history of aviation, navigation, weather, and communications. Concurrent with this Morse Code is learned.

The second semester is a comprehensive repeat of the first semester with radio navigation, flight physiology, and celestial navigation added. The last two months of the second semester are devoted to aerospace.

Field trips to airports, weather stations, and the agricultural aviation center at Stead are taken.

The instructor is an ex-military pilot with five years' experience and two years with TWA as a first officer. He has a commercial license with multi-engine, jet, and instrument ratings and is a certified ground and flight instructor.

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TEHACHAPI HIGH SCHOOL
Tehachapi Unified School District
Attention: Ralph Hickman
District Superintendent
Amos Wipf
Aviation Instructor
400 S. Snyder Ave.
Tehachapi, California 93561
Telephone: (805) 822-4461--District
822-3246--School

Program Began: Fall, 1968

Current Enrollment: 0
(Spring semester, 1972 resumption of classes anticipated)

Aviation science at the Tehachapi High School consists of a one-year laboratory science course which was initiated for the purpose of using aviation as a natural and interesting motivation for the study of science, math, and social sciences. Students learn about the full range of vocational opportunities existing in aviation. Although the classroom work is not designed as a preflight course, a natural outcome is expected to be the student's ability to pass the FAA private pilot written examination.

Outcomes anticipated from this program include an increase in desirable attitudes on the part of students who participate. Motivation for other classroom studies and the practical application of mathematics and science are made possible. Travel by the students extends benefits of geographic perspective. The specific emphasis on knowledge regarding vocational skills and vocational opportunities will be given.

The course uses the Introduction to Aviation Ground School text published by Aero Education Associates for the classroom instruction and for the adult education night school. Other materials will be used as the teacher sees fit.

Tehachapi is particularly well suited for glider and soaring operations. Therefore, even though this is a somewhat isolated community, the aviation education interests are considerable.

Background Factors Identified for 1968-70:

1. Aviation is the largest employer of trained individuals, other than agriculture.
2. The Tehachapi High School is not currently offering a full range of vocational education.
3. The staff of the Tehachapi High School has identified certain students who specifically need motivation for academic study and an outlet for their nonscholarly abilities.
4. Aviation is the most influential factor of society in the Twentieth Century. It is unthinkable that a school program designed to meet the needs of present and future students should totally overlook this area of modern life.

The Problem: The vocational opportunity for graduates in aviation is unlimited. The obvious need for pilots is simply the beginning in a long list of job skill career opportunities.

There is a definite need for a presentation of subject matter to certain pupils who are not now benefiting from current instructional methods.

Purpose of the course: To provide specific information about the aviation community, with particular emphasis upon occupational opportunities, and to provide certain flight experiences for students in order to train them in skills they shall be able to use later.

Aviation is proposed as a media for teaching the practical applications of mathematics, science, geography, history, economics, and other social sciences.

A proper motivation for certain students will help keep them in school and create an interest in the academic as well as the vocational programs.

Technique: Classes for high school students at the junior and senior level will be offered. One class in the evening for adults in the community is offered. Approximately 25 persons for each of the three classes are enrolled. The high school classes are one full year and the classes for adults are offered one night per week for one semester.

Science credit is given to high school pupils towards graduation, and adults receive elective credit towards their diplomas if they are enrolled as adult education students.

Course Offerings: Study in mathematics, science, history, geography, economics, and vocational opportunities are being taught through the following teaching units:

1. General aviation
2. The basic preflight science
3. History of flight
4. The impact of aviation on society
5. Federal air regulations
7. Weather
8. Physiological and psychological problems of flight
9. Electronics
10. Shop practice (if possible and if available)

Experiences: The program is to be presented through classwork, field trips, practical applications, and shop instruction (when and where feasible).

Classwork includes lectures, reading, homework assignments, observation, and the use of resource persons.

Study includes weather, with emphasis on the science of moisture, temperature, pressure, air masses, geographic implications, the weather reporting system, and the interpretation of weather data. A study of aviation occupations includes reading about and listening to persons who are involved in numerous aviation fields. Emphasis is given to management possibilities, service-type positions, maintenance and repair, and pilot training.

Study of navigation, including map reading, types of projections, drift, the mathematics of time, speed and distance relationships, compass headings, and radio navigation are all parts of the program.

Personnel: The instructor teaches four periods of regular class in another subject area, and two periods per day in air science.

Values Derived: Outcomes anticipated from this program include increase in desirable attitudes on the part of students who participate. Motivation for other classroom studies and the practical application of mathematics and science is made possible. Increased learning in the academic subjects has been observed many times in aviation education programs. Travel by the students and adults of this community would extend benefits of geographic perspective. A specific emphasis on knowledge regarding vocational skills and vocational opportunities would be given.

Evaluation: Evaluation of a program of this type must of necessity be somewhat subjective. Observation of student behavior and attitude, coupled with sample studies of student classroom output, would be possible. More specific efforts may be made of the Board of Trustees so desires.

Initiation of the Program: The importance of aviation in modern life, the need for a vocational program at the high school, the inherent interest in aviation itself, and the relatively low cost of such a course should make answers to community questions relatively easy. A committee of individuals who would be highly informed regarding the proposal should be set up. The involvement of community adults in an evening program is an important aspect.

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TULARE HIGH SCHOOL
Tulare Union High School District
Attention: Stanley H. Manro
Aerospace Science Instructor
755 E. Tulare St.
Tulare, California 93274
Telephone: (209) 686-4761

Program Began: 1948

Current Enrollment: 24

The aerospace science course at Tulare High School is designed for students at the 10th, 11th, or 12th grade level. No prerequisites are specified for this course that provides science credit.

Purpose

1. To survey the fundamentals of aircraft propulsion, spacecraft, weather, navigation, and traffic control
2. To urge students to use their imaginations for developing the potentialities of flight
3. To explore the vocational opportunities in aviation

Content

1. History of aviation and space exploration
2. Principles of flight and earth orbit dynamics
3. Weather--planetary atmospheres
4. Air navigation--avionics--orbital and space guidance
5. Power--piston and reaction
6. Airframe structures--space frames
7. Federal air regulations
8. Vocational opportunities in aerospace

Activities and Projects

1. Demonstration of the related indications of the gyro instruments on an actual, functioning, and suspended aircraft instrument panel.

Tulare High School students learn about aerodynamics in a simulator.

2. Observation of airfoil lift and drag via a classroom tunnel
3. Solution of navigation problems, using air charts, plotters, and computers
4. Aerospace Club weekly meetings and annual contests
5. Building, firing, tracking, and parachute recovery of model rockets
6. Field trips to airline offices and shops, airports and air bases, soaring school, weather bureau offices, parachute lofts, and aircraft factories

Materials of Instruction Used with All Students:

Texts and Reference Materials: Misenhimer, T. G., Aeroscience. Aeroproducts Research, Inc., 1970. Air Force ROTC HQ, USAF, Maxwell Air Force Base, Alabama, Foundations of Air Power. U. S. Superintendent of Documents, September, 1958. Civil Air Patrol, Aviation Study Manual, 1949, and The Dawning Space Age, 1963

Sanderson audio-visual ground instruction materials

Video tape recorder for playback of pertinent television specials

Magazines, bulletins, booklets and films from NASA, Douglas-McDonnell, Boeing Hughes, Shell, and United Air Lines

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VALENCIA HIGH SCHOOL
Placentia Unified School District
Attention: David P. Tansey, Principal
Lt Col Robert F. Steffy, USAF (Ret)
Aerospace Education Instructor
500 N. Bradford Ave.
Placentia, California 92670
Telephone: 714-524-4316

Program Began: 1969

Current Enrollment: 60

The Valencia High School aerospace education program is an outgrowth of the Air Force Junior ROTC academically oriented study of aviation and space activities including career opportunities in both civil and military establishments. A detailed outline of the curriculum provided by the Air Force Junior ROTC, Maxwell Air Force Base, Alabama 36112, is included under the report for Anderson High School.

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VERDUGO HILLS HIGH SCHOOL
Los Angeles Unified School District
Chairman, Mathematics Department; and
Aeronautics Instructor
10625 Plainview Ave.
Tujunga, California 91042
Telephone: (213) 353-1171

Program Began: September, 1971

Current Enrollment: 40

The aeronautics instructor, who is also chairman of the mathematics department at Verdugo Hills High School (which has an enrollment of over 2,300) developed the new one-semester aeronautics course in response to public demand and his feeling that the school's proximity to the heart of the high density aerospace industry made the course a necessity. Mr. Presnall, a pilot with nine years' experience, has found that it is easier to teach mathematics when it is related to a technology such as aeronautics in which students have a vital interest. It is significant also to note that as chairman of the mathematics department he expresses the point of view that any student who is doing satisfactory work in the aeronautics course should be "given the opportunity to substitute this course for one semester of high school math."

The Sanderson materials are used for the semester course. Flight experience is available. Content of the course briefly consists of the following:

1. Aviation History		.5 week
2. The Aerospace Age	Social, Economic, Political, Cultural, General Aviation, Commercial Aviation, Military Aviation, Careers	1 week
3. Physiology of Flight	Hypoxia, Hyperventilation, "G" Forces, Vision, Hearing, Fear, Fatigue, Vertigo	.5 week
4. Preflight Aerodynamics	Aircraft Components, Basic Structure, Lift/Weight, Thrust Drag, Longitudinal Axis, Roll, Lateral Axis/Pitch, Vertical Axis/Yaw, Center of Gravity, Center of Lift, Venturi Effect, Burble, Stall, Flight Controls, Propeller, Preflight Inspection	2 weeks
5. Instruments and Systems	Powerplant, Lubrication, Cooling, Fuel Hydraulic, Ignition, Electrical, Vacuum, Control, Flight Instruments, Gyroscope	1.5 week
6. Weight and Balance	Theory, Gross Weight, Balance, Loading Graph, Center of Gravity Envelope, Computation Method, Graph Method, Table Method	3 weeks
7. Flight Computer	Conversions, Values, Speed/Distance/Time/Fuel, Asimuth, Course/Heading/Speed, True Airspeed, True Altitude, Density Altitude	2 weeks
8. Navigation	Charts, Scale, Latitude, Longitude Symbols, Airports, Airspace, Air Traffic Control, Airman's Information Manual, Pre-Trip	

		Planning, True Course, Variation, Magnet Course, Deviation, Compass Course, Wind, Heading, Weather Information, Distance/Speed/Time/Fuel, Check Points, Flight Plan, Enroute Procedure	3.5 weeks
9.	Radio Navigation	Navigational Aids, VOR Procedures, ADF Procedures, Radar, ILS, Transponder	1 week
10.	Meteorology	U. S. Weather Bureau, Weather Maps, Clouds, Atmosphere, Pressure, Air Masses, Fronts, Fog, Thermals, Density Altitude, Turbulence, Icing, Pilot Weather Services, Dew Point, Relative Humidity, Teletype Reports	2 weeks
11.	Aircraft Radio Communications	Phraseologies, LF/MF, VHF, Ground Control, Tower, FSS, Approach/Departure Control, UNICOM	1 week
12.	Federal Aviation Regulations	Pilot Certification	.5 week
	Trip to Local Airport	Preflight C-172 after preflight content in text covered	
	Tour of Control Tower and Radar Room	Hollywood-Burbank FAR facilities	
		Total	18.5 weeks

In addition to the Sanderson materials mentioned above, the course will use a textbook, workbook, topographical and meteorological maps, and an E6B computer for navigation purposes.

Upon successful conclusion of the course, students will be able to take the Federal Aviation Administration test for flight, and Cessna Aircraft is offering a one-half hour of in-flight instruction at no cost to the student, if he wishes to continue in that field.

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VISTA HIGH SCHOOL
Vista City Unified School District
Attention: Robert W. Workman
Teacher, Basic Aviation
101 Escondido Ave.
Vista, California 92083
Telephone: (714) 726-5611

Program Began: 1969

Current Enrollment: 100

Basic aviation at Vista High School includes the ground school subjects normally studied by students desiring to take the private pilot's examination to obtain the FAA certificate. The course also includes short units on history, transportation, and careers in aviation. General scientific principles related to flying, construction, and operation of aircraft are stressed when appropriate. Although this course was introduced just a year ago, four students have received their certificates and one of the students has obtained his flight instructor's rating.

The local chapter of the Civil Air Patrol has loaned a World War II Link trainer to the school for classroom use. Although its condition precludes the serious study of instrument and navigational training, it has become a valuable tool when used for the following flights: (1) orientation (VFR)--coordinated turns, climbs, dives, and so forth; (2) communications (VFR)--pattern "flights" at a controlled airport, compass headings, altitude holding practice, and so forth; (3) control by instrument reference (HOOD)--turns, and so forth, and a demonstration of vertigo; (4) simulated radar vectors to an airport (HOOD).

Interested students are given orientation flights outside of school hours. The teacher is a private pilot with a basic ground instructor's rating.

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WASHINGTON HIGH SCHOOL
San Francisco Unified School District
Attention: Calvin Barnhart, Aviation Instructor
600 - 32nd Ave.
San Francisco, California 94121
Telephone: (415) 387-0550

Program Began: 1970

Current Enrollment: 17

This one-semester course is principally an FAA ground school program. The FAA Exam-O-Grams and other FAA publications are the principal text materials. All students take the FAA private pilot's written examination. Those who fail to pass it repeat the course the second semester.

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WILSON HIGH SCHOOL
Long Beach Unified School District
Attention: Herbert Egelko, Science Department Chairman
4400 E. Tenth St.
Long Beach, California 90804
Telephone: (213) 433-0841

Program Began: 1960

Current Enrollment: 33

The aviation program at Wilson High School is a one-year course utilizing as a text Introduction to General Aeronautics, the Coast and Geodetic Charts and Related Materials, and other current publications provided by the Federal Aviation administration, together with many aviation periodicals made available to students. The first semester constitutes a preliminary introduction to aviation, including the basic principles of aeronautics, a history of aviation, and air transportation, a study of the component parts and stability of an aircraft, and pertinent details about current aviation developments in our local community.

The second semester consists of a private pilot preparation program with all that this implies. Some of the students take the private pilot's FAA written examination, although this is not a prescribed portion of the program. Plans include the offering of an extensive laboratory program that provides actual flight experience at the local airports.

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WOODLAND HIGH SCHOOL
Woodland Joint Unified School District
Attention: William Robertson
Aeronautical Science Instructor
21 N. West St.
Woodland, California 95695
Telephone: (916) 662-4678

Program Began: 1968

Current Enrollment: 30

Aeronautical Science operates as a part of the science department at Woodland High School. It has been accepted as filling the physical science requirement for graduation. The course is offered to students not only to satisfy an interest on their part but also to serve a need of informing the general public of the multitude of services provided by aviation.

The course is offered as a two-semester course. It offers opportunities to learn about vocational opportunities in the various aerospace and aviation industries through various media and field trips. Students also study the history of aviation and flight. In the preflight phase, all contributing areas preparing students for the FAA written private pilot's examination are covered. Toward the end of this phase of study, students are given an opportunity to receive 30 minutes of flight instruction as a part of a 90-minute orientation flight. At this time, under the supervision of a flight instructor, students plot courses and fly a flight plan as a realistic test of their navigational skill and preflight education.

The flight experience has resulted from closely working together with the Woodland City Airport Committee and specifically with one of its members, Mr. Milton B. Watts, who is a fixed-base operator at the Woodland Airport. Students fly their orientation flight in a Beechcraft Musketeer. On a voluntary plan students participate by paying only one-third of the gasoline cost of the flight. The operation and school's liability is covered by Woodland Aviation, Inc., and L. E. Wraith & Associates Insurance Company of Woodland, with passenger liability in the amount of $100,000-$300,000.

Several students have taken flight training at their own expense, after completing the course. Several others indicated they have plans to become active in some facet of the aviation industry. Generally, the course engendered a great deal of enthusiasm and motivation in other related courses in school.

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UNITED
CLASSROOM SKY

The 1971 "Classroom in the Sky" was called "South to Alaska."

The North Pole is seen from the "Classroom" at an altitude of 1,500 feet.

AVIATION EDUCATION IN THE COMMUNITY COLLEGES OF CALIFORNIA

Aviation and aerospace education in the community colleges of California has assumed a variety of forms based upon the needs of the community, the facilities available to the air transportation college, the current demands for trained personnel, the FAA, and the special qualifications of the instructional staff. In most of the 36 community colleges of California in which aviation instruction is offered all of the basic purposes and the philosophy of the community college program are fulfilled in part by the aviation and aeronautics curriculum.

Thirteen of the California community colleges have Federal Aviation Administration certificated mechanic programs that qualify their graduates for admission to the examinations for ratings as airplane and engine mechanics. Nineteen of these colleges offer a flight program in some form. In most colleges the flight phase of the program is dependent upon the ownership and operation of club aircraft. The club carries insurance for both public liability and property damage and in some cases hires local flight instructors. In many of the newer programs that offer extensive flight instruction, including the air transport rating, the entire flight program is established with one or more local flight schools on a contract basis. Advisory committees for such colleges have recommended the use of two or more flight school operators and intermediaries such as the local bank, foundation, or student body association to collect and distribute funds from the students to defray the costs of flight operations.

The flight program is not a requisite in any of the community colleges, although many offer credit (by examination) for the flight program toward the A.A. or A.S. degree with a major in aeronautics. The obstacles encountered by colleges as they endeavor to establish aviation and aerospace education include a wide variety of problems that are gradually being overcome in most districts of the state. In this task they receive much help from the San Jose State College Aeronautics staff.

Some of the most current guidelines for consideration include the "Report to the Governor's Aerospace-Aviation Education Task Force," by Daniel G. Walker, former President of Cypress College, now Superintendent of Yuba College, Marysville, California 95901. Other sources of assistance are suggested in the rationale for aerospace-aviation education at the beginning of this report. The separation of the California community college program from the State Board system of public education prevents the author from going into more detail on this subject. However, the descriptions of programs that follow should be helpful to community colleges considering the development of a new program or strengthening an existing one.

The modern insistence upon accountability as a means of evaluating the college's aviation-aerospace education program is added reason for all aviation students being encouraged to take the FAA examinations. The resulting information, when added to the department's data bank of input derived from job placement, airline and aircraft manufacturers' evaluations, and helpful suggestions from the Federal Aviation Administration, can all be an invaluable source of assistance, especially at budget preparation time, when PROGRAM PLANNING is being stressed.

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CALIFORNIA COMMUNITY COLLEGES OFFERING AVIATION EDUCATION PROGRAMS

October, 1971

1. Bakersfield College
Att: Burns Finlinson, President
1801 Panorama Dr.
Bakersfield, CA 93305
Tel: (805) 871-7120

2. Chabot College
Att: Robert G. Hunter, Dean
25555 Hesperian Blvd.
Hayward, CA 94545
Tel: (415) 782-3000

3. Chaffey College*
Att: T. Stanley Warburton, President
Floyd A. Aanstad
5885 Haven Ave.
Alta Loma, CA 91701
Tel: (714) 987-4812

4. College of Alameda
Att: Warren J. Susan
5555 Atlantic Ave.
Alameda, CA 94501
Tel: (415) 635-2158 (Airport)
or 522-7221, x 265

5. College of San Mateo
Att: John P. (Jack) Nystrom
1700 W. Hillsdale Blvd.
San Mateo, CA 94402
Tel: (415) 574-6161

6. College of the Desert
Att: Don Welty, Coordinator
Community Services
43-500 Monterey Ave.
Palm Desert, CA 92260
Tel: (714) 346-8041, x 234

7. College of the Redwoods
Att: E. J. Portugal, President
Ernest Soper, Dean
Vocational Technology
Eureka, CA 95501
Tel: (707) 443-8411

8. Compton College
Att: Paul Alcantra, Division Chairman
Occupational Education
1111 E. Artesia Blvd.
Compton, CA 90221
Tel: (213) 635-8081

9. Cypress Junior College
Att: Omar Schiedt, President
9200 Valley View
Cypress, CA 90630
Tel: (714) 826-2220

10. Diablo Valley College
Att: Coral Bloom
Golf Club Road
Pleasant Hill, CA 94523
Tel: (415) 685-1230

11. Foothill & De Anza Colleges
Att: Ron Nelson
12345 El Monte Road
Los Altos, CA 94022
Tel: (415) 948-8590

12. Fresno City College*
Att: Harmon W. Allen
1101 E. University Ave.
Fresno, CA 93704
Tel: (209) 264-4721

13. Gavilan College*
Att: E. E. ("Mo") Mayfield
Coord., Aviation
2310 San Felipe Road
Hollister, CA 95023
Tel: (408) 637-1151

14. Glendale College*
Att: Thomas Ryan
Dean of Occupational Education
1500 N. Verdugo Road
Glendale, CA 91208
Tel: (213) 240-1000

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*FAA Certificated Mechanic School

15. Golden West College
Att: Edward M. Parsons
Industrial Education
15744 Golden West St.
Huntington Beach, CA 92647
Tel: (714) 892-7711

16. Long Beach City College*
Att: M. B. Gentry
Dean, Occupational Prep.
1305 E. Pacific Coast Hwy.
Long Beach, CA 90806
Tel: (213) 599-2421
or 420-4126

17. Los Angeles Trade Tech. Coll.*
Att: Donald V. Chase
9700 S. Sepulveda Blvd.
Los Angeles, CA 90045
(213) 776-5264

18. Merced College
Att: George A. Fuller
3600 M St.
Merced, CA 95340
Tel: (209) 723-0511
or 723-4321

19. Modesto Junior College
Att: Richard Schneider
College Avenue
Modesto, CA 95350
Tel: (209) 524-1451, x 336

20. Mount San Antonio College*
Att: Marie T. Mills (Mrs.)
Stewart M. Angle
1100 N. Grand Ave.
Walnut, CA 91789
Tel: (213) 339-7331
or (714) 595-2211

21. Ohlone College
Att: Robert Niederholzer
650 Washington Blvd.
Fremont, CA 94537
Tel: (415) 657-2100

22. Orange Coast College
Att: John S. Owens
2701 Fairview Road
Costa Mesa, CA 92626
Tel: (714) 834-5894

23. Palo Verde College
Att: Donald Kaegi
811 W. Chancelorway
Blythe, CA 92225
Tel: (714) 922-6168

24. Pasadena City College
Att: John R. Toothaker
1570 E. Colorado Blvd.
Pasadena, CA 91106
Tel: (213) 795-6961

25. Reedley College*
Att: Jack L. Stevenson
Box 880
Reedley, CA 93654
Tel: (209) 638-3641

26. Sacramento City College*
Att: Robert Wilson
3835 Freeport Blvd.
Sacramento, CA 95822
Tel: (916) 449-7568

27. San Bernardino Valley College*
Att: Arthur M. Jensen
Arthur E. Scholl
701 S. Mt. Vernon Ave.
San Bernardino, CA 92403
Tel: (714) 885-0231

28. San Diego City College* and
San Diego Evening College*
Att: Walter G. Coats
835 Twelfth Ave.
San Diego, CA 92101
Tel: (714) 236-1331

29. San Diego Mesa College
Att: Murl Gibson
7250 Artillery Dr.
San Diego, CA 92111
Tel: (714) 279-2300

30. San Francisco Internat'l Airport
School of the City College
of San Francisco
Att: Al Waltz, Chief Administrator
Roscoe Hutton
San Francisco Internat'l Airport
San Francisco, CA 94128
Tel: (415) 588-0325

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*FAA Certificated Mechanic School

31. San Joaquin Delta College
Att: Anthony Trujillo
3301 Kensington Way
Stockton, CA 95204
Tel: (209) 466-2631

32. San Jose City College
Att: Howard Biebesheimer
2100 Moorpark Ave.
San Jose, CA 95114
Tel: (408) 298-2182

33. Santa Barbara City College
Att: John Ingram
721 Cliff Drive
Santa Barbara, CA 93105
Tel: (805) 965-0581

34. Santa Rosa Junior College
Att: Roy Mikalson, President
D. Magowan
1501 Mendocino Ave.
Santa Rosa, CA 95401
Tel: (707) 542-0315

35. Shasta College
Att: Gary E. Cooper
1065 Old Oregon Trail
Redding, CA 96001
Tel: (916) 241-3523

36. Victor Valley College
Att: Roy R. Russell, Director
Aeronautics Department
18422 Bear Valley Rd.
Victorville, CA 92392
Tel: (714) 245-4271

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SELECTED DESCRIPTIONS
OF
COMMUNITY COLLEGE PROGRAMS

The following descriptions of community college aviation or aerospace education programs provide enough detail about a variety of approaches to serve as a guide for others. It will be noted that some colleges offer only a very general pilot-support program and others include vocational objectives and instruction for students desiring to become FAA certificated aircraft and engine technicians. Other colleges emphasize flight instruction, air traffic control training, and many other specialized vocational and career pursuits based upon individual needs. Whatever the purpose, the schools and colleges now have added reason to encourage students to take the FAA examinations. (All colleges are urged by FAA to become familiar with all FAR and to continue modification of curriculum. Note 147.21 in particular.)

CHAFFEY COMMUNITY COLLEGE
Attention: Lloyd Anstaad
Division Chairman
Industrial Technical Division
Aeronautics Department
5885 Haven Ave.
Alta Loma, California 91701
Telephone: (714) 987-1737

Program Began: 1947

Current Enrollment: 132

Program Includes:
1. FAA Approved Airframe Mechanic Courses
2. FAA Approved Powerplant Mechanic Courses

The aeronautics curriculum at Chaffey College consists primarily of aircraft powerplant and airframe mechanics instruction. The powerplant instruction includes both theory and practical experience in disassembling, inspecting, overhauling, and repairing aircraft engines and accessories and connecting engines for operation and testing.

The program in airframe mechanics includes both theory and practical experience in construction, inspection, maintenance, and repair of aircraft (one hour of lecture and three hours of shop each day, five days a week).

This FAA-approved A & P program provides the minimum of 1,900 hours necessary for a student to be eligible to apply for an FAA examination. The total program extends over nine quarters:

three quarters of general aeronautics sciences and practices

three quarters of powerplant

three quarters of airframe

The Associate in Arts degree with a major in aeronautics requires 90 quarter units of work in the aeronautics courses, drafting technology, industrial electrical technology, machine and metals technology, physical science, American institutions, English, health education, and physical education. Most of the graduates are employed in the aviation industry in a broad spectrum of occupations that includes airline pilots, aviation mechanics, and so forth.

Ground schools for pilots (Aero 583-a, b, and c) are three 3-unit courses made available for prospective pilots. Flight instruction is also made available to the students at Chaffey College through a flight club known as the Chaffey College Flying Club (a nonprofit corporation). Students pay $8 per hour for dual or solo instruction in three Cessna 150's. The liability of the college, its agents and employees is covered by a $100,000 to $500,000 bodily injury liability (excluding passengers) policy for which the district pays a premium of approximately $632. The policy also provides for $100,000 to $200,000 passenger bodily injury liability and $50,000 property damage liability coverage.

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COLLEGE OF SAN MATEO
Attention: John P. (Jack) Nystrom
1700 W. Hillsdale Blvd.
San Mateo, California 94402
Telephone: (415) 574-6161

Program Began: 1930

Current Enrollment: Approximately 820 (Day, 491; Evening, 329)

Program Includes:

1. A. A. Degree Programs Aeronautics Major:
    - a. Airframe — 1,040 hours minimum* - 44 units
    - b. Powerplant — 1,040 hours minimum* - 44 units
    - c. Combined Airframe and Powerplant — 1,660 hours minimum* - 64 units
2. FAA Approved Airframe and Powerplant Mechanic Courses
3. FAA Approved Ground and Flight Instruction for Pilots

The aviation education program at San Mateo currently has an overall enrollment of approximately 820 students in a total of 25 different classes in 59 sections. A brief description of the aviation course offerings is available from Mr. Nystrom upon request. He is making the changes specified by FAR 147.21.

The program includes commercial flight instruction. As of October, 1971, the college enrolled over 100 approved commercial flight students. The contract for flight instruction was awarded to eight flight schools that were surveyed by the selection team. These include: Nystrom Aviation, Flood's Flying Service, Flight Safety, West Bay Aviation, Jim Duncan's Flying Service, Blue Helicopter, Skyway Aviation, and West Coast Aviation. The contractor assigns instructors to the flight operation. The college owns five aircraft which are used in the total program but not as a part of the flight program.

The flight-school operator provides liability insurance coverage amounting to an aggregate limit for any one accident of $5,000,000 per accident. Students pay all costs for flight instruction, and a total of eight units of credit are completed in the commercial flight portion of the course. The credit value for all school courses is described in the college catalog.

The maintenance technician program includes the FAA Airframe and Powerplant Mechanics courses, related training for airline apprentice mechanics, and upgrading training for persons already employed in the aeronautics industry. The FAA Airframe and/or Powerplant Mechanic Certificate(s) is available upon successful completion of the FAA examinations after 1,040 hours of instruction or 1,660 hours for both certificates.

Graduates of these programs are employed in general aviation, the airlines, and military aviation. Many students elect to transfer to the San Jose State College to complete a B. S. degree in Aeronautics and find the foundation provided at the College of San Mateo to be an excellent springboard for transfer. Ten full-time day instructors and nine evening college instructors presently provide the necessary classroom staff for this comprehensive aeronautics program.

Details of the aviation technician, aviation mechanic, pilot training programs, and overall aeronautics curriculum are included in this report for the guidance of other districts.

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*By May 1, 1972, these minimums will be increased to meet FAR 147.21 current requirement of: Airframe--1,150; Powerplant--1,150; combined A & P--1,900.

SUGGESTED AIRFRAME CURRICULUM

(See footnote at end of curriculum.)

GENERAL

Semester	Course No.	Subject	Lecture	Lab	Units
I	Aero 50	General Maintenance	X		5
	Aero 50L	General Maintenance Lab		X	5
	Aero 51	Applied Aero Methods	X		3

Minimum Hours 400

AIRFRAME

Semester					
II	Aero 60	Aircraft Electrical	X		3
	Aero 60L	Aircraft Electrical Lab		X	3
	Aero 80	Aircraft Basic Structures	X		2
	Aero 80L	Aircraft Basic Structures Lab		X	2
III	Aero 81	Aircraft Structures	X		5
	Aero 81L	Aircraft Structures Lab		X	5
IV	Aero 82	Aircraft Systems & Components	X		5
	Aero 82L	Aircraft Systems & Components Lab		X	5

Minimum Hours 750

Total Minimum 1150

SUGGESTED POWERPLANT CURRICULUM

(See footnote at end of curriculum)

GENERAL

Semester	Course No.	Subject	Lecture	Lab	Units
I	Aero 50	General Maintenance	X		5
	Aero 50L	General Maintenance Lab		X	5
	Aero 51	Applied Aero Methods	X		3

Minimum Hours 400

POWERPLANT

Semester					
II	Aero 60	Aircraft Electrical	X		3
	Aero 60L	Aircraft Electrical Lab		X	3
	Aero 70	Aircraft Basic Powerplant	X		2
	Aero 70L	Aircraft Basic Powerplant Lab		X	2
III	Aero 71	Aircraft Powerplant Theory & Main.	X		5
	Aero 71L	Aircraft Powerplant Theory & Main. Lab		X	5
IV	Aero 72	Aircraft Powerplant Sys. & Componen.	X		5
		Aircraft Powerplant Sys. & Componen. Lab		X	5

Minimum Hours 750

Total Minimum 1140

COMBINED GENERAL, AIRFRAME, AND POWERPLANT CURRICULUM

(See footnote at end of curriculum.)

Course No.	Subject	Lecture	Lab	Units
Aero 50	General Maintenance	X		5
Aero 50L	General Maintenance Lab		X	5
Aero 51	Applied Aero Methods	X		3
		Minimum Hours		400
Aero 60	Aircraft Electrical	X		3
Aero 60L	Aircraft Electrical Lab		X	3
Aero 70	Aircraft Basic Powerplant	X		2
Aero 70L	Aircraft Basic Powerplant Lab		X	2
Aero 71	Aircraft Powerplant Theory & Main.	X		5
Aero 71L	Aircraft Powerplant Theory & Main. Lab		X	5
Aero 72	Aircraft Powerplant Sys. & Components	X		5
Aero 72L	Aircraft Powerplant Sys. & Components Lab		X	5
Aero 80	Aircraft Basic Structures	X		5
Aero 80L	Aircraft Basic Structures Lab		X	5
Aero 81	Aircraft Sys. & Components	X		5
Aero 81L	Aircraft Sys. & Components Lab		X	5
		Minimum Hours		1900
		Total Maximum Hours		2580

GENERAL, AIRFRAME, POWERPLANT, AND COMBINED AERONAUTICS CURRICULUM

General Maintenance Curriculum			
Hours	Minimum 400	Maximum 450	
Four Semesters			
Airframe Certificate Curriculum			
Hours	Minimum 750	Maximum 1020	Total-1150 Minimum
Four Semesters			1470 Maximum
Airframe Certificate Curriculum			
Hours	Minimum 750	Maximum 1020	Total-1150 Minimum
Four Semesters			1470 Maximum
Combined Airframe & Powerplant Certificate Curriculum			
Hours	Minimum 1900	Maximum 2590	Total-1900 Minimum
Four Semesters			2590 Maximum

NOTE: Lecture-to-laboratory ratio equals 1-3, or 25 percent lecture and 75 percent laboratory, in all curricula except General, which has a ratio of 1-2. Verification of work accomplished and class time is maintained on permanent class records and student time cards. Federal Air Regulations parts 21, 23, 25, 27, 43, 65, 91, and 145 are covered in all of these classes.

COLLEGE OF SAN MATEO
COMMERCIAL PILOT PROGRAM
FALL SEMESTER 1971

Prerequisites:

1. Eligibility for English A or 1A
2. Eligibility for Math 55 (high school algebra, grade of C or better, or Math 11 with grade of C or better)
3. Otis Mental Ability Test with a raw score of 57 or higher
4. First Class Flight Physical
5. Acceptance by Flight Review Board

It is recommended that the flight physical be taken after the test scores have been established.

Admissions form must be completed and returned to the Registrar, transcripts must be requested from high schools and colleges attended and sent to the Registrar, and the Application for Commercial Pilot Training must be completed and returned to the Aeronautics Department prior to taking tests.

1. This program includes the Associate in Arts degree with a major in Aeronautics, a Commercial Pilot's Certificate, and an Instrument Rating.
2. The cost of the flight training is the student's responsibility (tuition in other college aviation education courses is free).
3. Flight training is provided through a contractor and all fees are paid direct to the contractor.
4. Cost of the flight program, including 180 hours of flight time, is $3,600 to $4,000. (Books, computers, and materials are not included in this price.)
5. Previous college courses and/or flight experience will be evaluated in relation to required courses outlined in required flight curriculum.
6. A continuing 2.6 (or B-) grade point average is required while the student is enrolled in the Commercial Pilot Program. Students falling below this level will be dropped from flight until deficiency is made up.
7. A beginning program is available each semester.
8. Students will be notified whether or not they have passed the tests and have been accepted for the program. Notification will be given at that time regarding their appointment with the Flight Review Board.
9. G. I. benefits may be obtained for all subjects except those that include actual flight in aircraft.
10. Aero 16, Instructor's Rating; and Aero 17, Multi-Engine, are optional.
11. Applicants must receive the first class physical from an FAA-approved physician. Bring a copy of the certificate they issue to the Aeronautics Department, Building 25, Room 170, for verification, upon registration.

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FOOTHILL COLLEGE
Attention: R. D. (Ron) Nelson
Department Chairman, Engineering Technology
12345 El Monte Road
Los Altos, California 94022
Telephone: (415) 948-8950

Program Began: 1966

Current Enrollment: 304

Planning for the aeronautics program of the Foothill College District began in July of 1966. The overriding purpose of the Career Pilot Training Program, with its three majors, is to prepare students for careers as commercial pilots, flight instructors, or multiengine pilots. There is also a transfer aeronautics program consisting of a curriculum at Foothill College that will enable a student who completes the course to transfer to San Jose State College as an Aeronautics Operations major with upper division standing.

The A. A. degree program consists of six quarters and one summer school session. A new class is accepted each fall. The courses and quarter patterns have been coordinated with San Jose State College to provide direct transfer without loss of credit. While inflight courses and the A. A. degree program will be restricted to bona fide Career Pilot majors, all aeronautics ground school courses and some inflight courses will be open to all qualified individuals.

Aeronautics ground school and related courses will be offered at the college day and evening. All flight courses will be given at selected flight schools. Flight credit will be granted only for courses completed successfully in flight schools with which the college has a contractual agreement. For the years 1968-72 these are: Flight Safety, Inc., at San Carlos Airport; and San Jose Flight School, Inc., at San Jose Municipal Airport.

All costs for flight instruction will be borne by the student. Fees for flight instruction will be paid directly to the flight school by the student. (Each flight school has agreed to assist students in obtaining scholarships, grants, and low interest-bearing loans.)

Qualification for the A. A. degree with any major consists of the following:

First Quarter
- Pass algebra qualifying examination or Math 101
- High school geometry or Math 102 recommended
- FAA 2nd Class Medical Certificate or higher

Second Quarter
- GPA (Grade Point Average) of 2.0 or better in all courses listed for the first quarter
- Not less than "C" in any aeronautics course
- Written recommendation of a primary flight instructor
- Personal interview with a college-appointed Career Pilot Selection Committee
- Maximum age of 29 upon completing the A. A. degree recommended
- Minimum vision of 20/30 corrected recommended
- Height between 5'6" and 6'4" recommended

Summer Session and Third Quarter
- Passing grades in all courses

Fourth Quarter

- Commercial Pilot major
  - Written recommendation of an intermediate flight instructor
  - Personal interview and recommendation of Career Pilot Selection Committee
  - Satisfactory completion of all courses listed prior to the fourth quarter
- FAA 1st or 2nd Class Medical Certificate (The FAA Medical Certificate must be obtained from the college by calling the Santa Clara County Medical Society or by contacting either of the flight schools.)
- Flight Instructor major
  - Written recommendation of an intermediate flight instructor
  - Personal interview and recommendation of Career Pilot Selection Committee
  - Overall GPA of 2.5 or better
  - Not less than a "C" in any aeronautics course
  - FAA 1st or 2nd Class Medical Certificate
- Multiengine major
  - Written recommendation of an intermediate flight instructor
  - Personal interview and recommendation of Career Pilot Selection Committee
  - Overall GPA of 2.5 or better
  - Not less than "C" in any aeronautics course
  - FAA 1st Class Medical Certificate
  - Maximum age of 29 upon completion of the A.A. degree recommended
  - Minimum vision of 20/30 corrected recommended
  - Height between 5'6" and 6'4" recommended

The aeronautics student at Foothill is scheduled in the selected aero courses consisting of ten "ground school" and four flight courses, depending upon the option selected. In addition, all students are required to take general education courses to help them function effectively as individuals, become educated members of their community, and leave the college with the basic preparation for transfer to the San Jose State College (if transfer is the objective) or extend their studies in aeronautics wherever they may choose to go. Suggested curricula are provided as follows:

CAREER PILOT MAJOR--Commercial Pilot Option

Curriculum requirements for A. S. degree

Prerequisites: High school algebra or Math 101; ACT math score of 20 or higher; high school geometry or Math 102 desirable: FAA 2nd class medical certificate or higher

FIRST YEAR	Units	SECOND YEAR	Units
FALL		FALL	
Aero 51A-Navigation and Basic Ground School	5	Aero 82B-Adv Flight Training	2
[1]Engl 102-Fund of Composition	4	Psych 1A-General Psychology	4
Math 60A-Technical Mathematics	4	[2]Soc Sc/Lit/Philo Elective	4
Guid 50-Introduction to College	1	[3]Bus or [4]Restricted Elective	5
P E	½	P E	½
	14½		15½

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[1] May be met by English 1A

[2] Must be selected from the ethnics study list

[3] Business Electives (following two sequences recommended): (a) Bus 1A, 1B, 1C; (b) Bus 52 and two of the following: Bus 53, 54, 57, 60, 90, 95, 96

[4] Restricted Electives: Astro 10; Physics 2A, 2B, 2C; Bus 18; Geography 1, 2; Math 51

(Career Pilot Major-Comm'l Pilot Option, cont.)

FIRST YEAR	Units	SECOND YEAR	Units
WINTER		WINTER	
Aero 51B-Intermediate Navigation	4	Aero 56-Turbine Powerplants	3
Aero 80-Basic Flight Training	1	Aero 64-Elementary Aerodynamics	3
Meteo 10-Weather Processes	4	Aero 66-Aviation Laws and Req	3
Spch 1A-Public Speaking	4	Aero 65-Flight Instruction Tech	3
Phys 10-Concepts of Physics	5	Hlth 21-Health	3
P E	½	P E	½
	18½		15½
SPRING		SPRING	
Aero 51C-Adv Navigation and Instrument Procedures	4	Aero 68-Aircraft Systems and Structures	5
Aero 55-Reciprocating Powerplants	4	Elec 60-Survey of Electronics	4
Aero 82A-Intermediate Flight Trng	1	Fine Arts Elective	4
[1]Polsc 1, 7, or 5-American Govt	4	Free Elective	1
Free Elective	4	P E	½
P E	4		15½
	17½		

CAREER PILOT MAJOR (Flight Instructor Option)

Curriculum requirements for A.S. degree

Prerequisites: High school algebra or Math 101; ACT math score of 20 or higher; high school geometry or Math 102 desirable; FAA 2nd class medical certificate

FIRST YEAR	Units	SECOND YEAR	Units
FALL		FALL	
Aero 51A-Navigation and Basic Ground School	5	Aero 82B-Adv Flight Training	2
Math 60A-Technical Mathematics	4	Psych 1A-General Psychology	4
[2]Engl 102-Fund of Composition	4	[3]Soc Sc/Lit/Philo Elective	4
Guid 60-Introduction to College	1	[4]Restricted Elective	5
P E	½	P E	½
	14½		15½
WINTER		WINTER	
Aero 51B-Intermediate Navigation	4	Aero 56-Turbine Powerplants	3
Meteo 10-Weather Processes	4	Aero 64-Elementary Aerodynamics	3
Aero 80-Basic Flight Training	1	Aero 66-Aviation Law & Req	3
Spch 1A-Public Speaking	4	Aero 65-Flight Instruction Tech	3
Phys 10-Concepts of Physics	5	Hlth 21-Health	3
P E	½	P E	½
	18½		15½

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[1] May also be met by History 17A-B or History 17A-C

[2] May also be met by English 1A

[3] Must be selected from ethnic studies list

[4] Restricted Electives: Astro 10; Physics 2A, 2B, 2C; Bus 18; Geography, 1, 2; Math 51

(Career Pilot Major-Flight Instructor Option, cont.)

FIRST YEAR	Units	SECOND YEAR	Units
SPRING		SPRING	
Aero 51C-Adv Navigation Instrument Procedures	4	Aero 68-Aircraft Systems and Structures	5
Aero 55-Reciprocating Powerplants	4	Aero 83-Flight Instructor Trng	1
Aero 82A-Inter Flight Training	1	Elec 60-Survey of Electronics	4
[1]Polsc 1, 7, or 51-American Govt	4	Fine Arts Elective	4
Free Elective	4	P E	½
P E	½		14½
	17½		

CAREER PILOT MAJOR (Multi-Engine Option)

Curriculum requirements for A. S. degree

Prerequisites: High school algebra or Math 101; ACT math score of 20 or above; high school geometry or Math 102 desirable; FAA 2nd class medical certificate

FALL		FALL	
Aero 51A-Navigation and Basic Ground School	5	Aero 82B-Adv Flight Training	2
Math 60A-Technical Mathematics	4	Psych 1A-General Psychology	4
[2]Engl 102-Fund of Composition	4	[3]Soc Sc/Lit/Philo Elective	4
Guid 50-Introduction to College	1	[4]Restricted Elective	5
P E	½	P E	½
	14½		15½
WINTER		WINTER	
Aero 51B-Intermediate Navigation	4	Aero 56-Turbine Powerplants	3
Aero 80-Basic Flight Training	1	Aero 64-Elem Aerodynamics	3
Meteo 10-Weather Processes	4	Aero 66-Aviation Laws and Req	3
Spch 1A-Public Speaking	4	Hlth 21-Health	3
Phys 10-Concepts of Physics	5	Free Elective	3
P E	½	P E	½
	18½		15½
SPRING		SPRING	
Aero 51C-Adv Navigation and Instrument Procedures	4	Aero 68-Aircraft Systems and Structures	5
Aero 55-Reciprocating Powerplants	4	Aero 84-Multi-Engine Flight Trng	1
Aero 82A-Intermediate Flight Trng	1	Elec 60-Survey of Electronics	4
[1]Polsc 1, 7, or 51-American Govt	4	Fine Arts Elective	4
Free Elective	4	P E	½
P E	½		14½
	17½		

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[1] May be met also by History 17A-B or 17A-C

[2] May be met by English 1A

[3] Must be selected from the ethnics study list

[4] Restricted Electives: Astronomy 10; Physics 2A, 2B, 2C; Business 18; Geography 1, 2; Mathematics 51

AIRLINE HOSTESS MAJOR--General Option

Curriculum requirements for A. A. degree

Prerequisites: Must be able to type 35 WPM net. May be satisfied by examination or completion of Business 70A.

FIRST YEAR	Units	SECOND YEAR	Units
FALL		FALL	
[1]Engl 102-Fund of Composition	4	AH 53A-Air Career	5
AH 51-Personal Development	3	Geog 2-Cultural Geography	4
Hlth 21-Health	3	Optional Program Course	4
Guid 50-Intro to College	1	P E	½
Optional Program Course	4		13½
P E	½	WINTER	
	15½	AH 53B-Air Career	5
WINTER		Spch 55-Voice and Diction	4
Spch 1A-Public Speaking	4	OR	
AH 52A-The Hostess Career	5	Drama 20A-Prin of Acting (2)	
Hlth 5-First Aid & Safety Ed	3	Fine Arts Elective	4
Optional Program Course	3	[2]Soc Sc/Lit/Philo Elective	4
P E	½	P E	½
	15½		17½
SPRING		SPRING	
AH 52B-The Hostess Career	5	AH 54-Intro to Aeronautics	4
Optional Program Course	4	AH 53C-Air Career	4
Science Elective	4	Psych 1A-General Psychology	4
[3]Polysc 1, 7, or 51-American Govt	4	Optional Program Course	4
P E	½	P E	½
	17½		16½

AIRLINE HOSTESS MAJOR--Overseas Carrier Option

Curriculum requirements for A. A. degree

Prerequisites: Must be able to type 35 WPM net. May be satisfied by examination or completion of Business 70A.

FALL		FALL	
[1]Engl 102-Fund of Composition	4	AH 53A-Air Career	5
AH 51-Personal Development	3	Geog 2-Cultural Geography	4
Hlth 21-Health	3	Foreign Language	4
Guid 50-Intro to College	1	[4]Free Elective	4
Foreign Language	4	P E	½
P E	½		16½
	17½		

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[1] May be satisfied by English 1A

[2] Must be taken from ethnics study list

[3] May be satisfied by History 17A-B or History 17A-C

[4] May be satisfied by Foreign Language, 4th Level, or Foreign Language 30 course

FIRST YEAR

(Airline Hostess Major--
Overseas Carrier Option, cont.)

WINTER

	Units
Spch 1A-Public Speaking	4
AH 52A-The Hostess Career	5
[1]Polysc 1, 7, or 51-American Govt	4
Foreign Language	4
P E	½
	17½

SPRING

	Units
AH 52B-The Hostess Career	5
Fine Arts Elective	4
Foreign Language	4
P E	½
	13½

SECOND YEAR

WINTER

	Units
AH 53B-Air Career	5
Spch 55-Voice and Diction OR Drama 20A-Prin of Acting (2)	4
Hlth 5-First Aid & Safety Ed	3
[2]Soc Sc/Lit/Philo Electives	4
P E	½
	16½

SPRING

	Units
AH 54-Intro to Aeronautics	4
AH 53C-Air Career	4
Psych 1A-General Psychology	4
[2]Science Elective	4
P E	½
	16½

AIRLINE HOSTESS MAJOR
Optional Program Courses

Accounting Emphasis

	Units
Bus 54-Business Mathematics	3
Bus 70B-Professional Typing	2
Bus 1A-Prin of Accounting	4
Bus 1B-Prin of Accounting	4
Bus 1C-Prin of Accounting	4
Bus 81-Bus Machines Calculations or Business Law (4) or Business Economics (4)	3

Office Operations Emphasis

	Units
Bus 54-Business Mathematics	3
Bus 60-Fund of Accounting	4
Bus 70B-Professional Typing	2
Bus 81-Business Machines	3
Bus 83C-Clerical Office Practice OR Bus 80-Office Procedures	4
Bus 18-Business Law OR Bus 53-Business Economics	4

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[1] May be satisfied by History 17A-B or History 17A-C
[2] Must be taken from ethnics study list

MOUNT SAN ANTONIO COLLEGE
Attention: Stewart M. Angle, Chairman
Department of Aeronautics and Transportation
1100 N. Grand Ave.
Walnut, California 91789
Telephone: (213) 339-7331
(714) 595-2211

Program Began: 1953

Current Enrollment: 956--By Majors, as of Fall 1971:

Air Transportation	138	Air Traffic Control	83
Commercial Flight Training	207	Aircraft Mechanics	166
		Surface Transport	15
Airline Stewardess	389	Certificate Program	58

Program includes:

1. FAA-Approved Airframe Mechanics Training
2. FAA-Approved Powerplant Mechanics Training
3. FAA-Approved Commercial Flight Training
   (This major includes basic, advanced, and instrument ground school; navigation; meteorology; aircraft and engines; Federal Air Regulations; climatology; and FAA-approved flight instruction.)
4. Airline Stewardess Training
5. Air Transportation Training
6. Air Traffic Management
7. Certificate Program--Travel Agency Technology
8. Certificate Program--Transportation and Traffic Management

(NOTE: All of the above listed majors
lead to an associate in Arts degree.)

The aeronautics program at Mount San Antonio College includes 25 day classes taught by eight instructors, and ten evening classes taught by seven instructors.

The primary objective of the aviation program is to train young pilots to become responsible young men. Learning to fly competently is considerably more than learning a set of physical responses; it requires a high degree of self-confidence and sound judgment and to this end the program is dedicated. Learning to fly is only a means to an end and not the end in itself. The accumulation of certificates or ratings is secondary to the development of the individual. The airplane serves as a motivating force which provides many of the students with the drive to accomplish the above stated objectives.

1. The airframe mechanics and powerplant mechanics programs lead to certification by the FAA upon successful completion of the course and the FAA test for airframe and powerplant mechanics.

2. All courses in the commercial flight program are taught on the campus with the exception of the actual flight instruction. Flight training takes place off-campus at FAA-approved flight schools near the college. In addition to regular academic credit for all other courses, credit for flight is granted at the rate of one (1) unit for each 15 hours successfully completed at an FAA-approved flight school. The "fixed-base operator" of the flight portion of the program carries liability insurance in

Robert Elliott, Acting Dean, Technical and Industrial Education; Terry Dohrmann, student; Dr. Marie T. Mills, College President; and student Chris Allison receive congratulations from Harry Noblitt (advisor).

UNITED
CLASSROOM IN THE SK

Mt. San Antonio College's global "Classroom in the Sky" on its Astro-Lunar Mission-Apollo 12 tour in 1970.

the amount of $100,000 per accident and $50,000 per seat. Fifteen aircraft (mostly Cessnas), including one Twin Apache, are available for student use. The cost of flying, borne entirely by the student, varies from $8 per hour to $35 per hour for solo and from $14 per hour to $41 per hour for dual instruction, depending upon which aircraft is used.

3. The Mount San Antonio College Flying Club owns, maintains, operates, and provides the necessary insurance for a Cessna 172 for all members. The airframe and powerplant students perform all maintenance on the aircraft, in compliance with the FAA requirement of servicing a live aircraft.

4. The Airline Stewardess major is supported and complemented by the Air Transportation major, which aims at supplying a variety of ground-support personnel to meet the needs of the major airlines. The program follows much the same basic philosophy as in the flight program. Young ladies are not trained to become stewardesses as such, but those who have stewardess potential and a manifest interest in aviation are trained to become confident, self-assured and sophisticated, with a good background in the air transportation industry. This product is in great demand. Five major carriers visit the campus each year and spend from six to ten days interviewing. Better than 90 percent of the young ladies find employment in their chosen field. One airline has hired over 200 stewardess majors since the program began.

5. An Air Traffic Management program is now offered. During the summer of 1972 there will also be on-the-job training for students working in March AFB RAPCON and several civilian airport towers. To help defray the expense of education in this field, 19 selected students in the program will be offered the opportunity to work a specific amount of time during the summer with the FAA. Those students will be employed under the "Summer Work Program" at GS-3 grade and will also receive, in conjunction with Air Traffic Control Work Experience Course 47, four units of college credit. The scholastic standing of students seeking this summer work opportunity will be taken into consideration, with a 2.0 grade point average at Mount San Antonio College as the base.

There are over 87 commercial flight training majors now flying with major carriers, and since the program began there have been approximately 225 students who have entered the Naval Aviation Cadet Program with only three known failures.

In addition to the commercial flight training and airline stewardess majors, students desiring to enter the air transportation industry in other than flight operations can follow the commercial air transportation major. This program prepares the student for the typical entry-level jobs such as telephone sales, reservations, ramp agent, air cargo agent, and many more.

The college is now occupying its new aviation complex--an approximately $3.8 million facility with all of the latest training aids available, including two flight simulators. Plans are being studied now for the inclusion of flight instructors ground school in the day curriculum and an expanded evening program that will include sophisticated navigation techniques.

On Saturday, March 7 1970, Mt. San Antonio College launched its fourth Classroom in the Sky, using a United Airlines DC-8 flown by Captain Bill Arnott and manned by an all Mt. SAC crew. The Classroom--literally a flying laboratory--departed from Los Angeles International Airport at 4:00 a.m., its primary objective to observe and photograph the total eclipse of the sun which began at 1:13 EST that afternoon and took the class to 41,000 feet over the Gulf of Mexico. The group "followed the sun" at Mach 82 for an extended period. The Classroom then landed at Melbourne Airport in Florida for an informative VIP tour of the Apollo facilities at Cape Kennedy and later flew to Houston, Texas, for a visit on Sunday, March 8, to major points of interest in and near that huge manufacturing and shipping city. Highlights were the Houston Ship Channel, the Astrodome, the San Jacinto Battlefield--but especially Mission Control and the Manned Spacecraft Center, newest and largest NASA installation and control point for American lunar flights. Cost of the experience was borne by the students at $225 each.

Saturday, May 22, 1971, students, staff and friends of Mount San Antonio College departed on its fifth and most spectacular Classroom in the Sky, "South to Alaska." A chartered United Air Lines long-range DC-8, manned by MSAC graduates and one father of a Mountie, jetted from Ontario International Airport at 2:00 a.m. on its historic flight to Boston for a tour of the Christian Science Maparium, Paul Revere's home, Old Ironsides, and Harvard University. From Boston the group flew north, over Chubb Crater and Greenland, to 90 degrees north latitude--the North Pole--where, with the assistance of three on-board inertial guidance systems, they orbited the eerily lit Pole at low altitude. The MSAC classroom flag, carrying signatures of all the students and crew, and their talismans were dropped in commemoration of this unique flight. The group then flew "south to Alaska," stopping overnight at Anchorage. Sunday brought clear skies for a tour of Portage Glacier, the Mt. Alyeska ski area, and Earthquake Park. The flight home followed the Alaska-Canada-United States coastline with views of renowned mountain peaks all the way. Total cost of this ambitious and unusual educational experience was $315 for 11,000 miles of flight.

Come May, 1972, the Classroom heads south to the Panama Canal, Jamaica, and the magnificent Mayan Ruins of Merida, Mexico, on a trip appropriately called "Locks, Bongos, and Pyramids."

In 1973, the MSAC group intends its greatest venture yet--"Around the World in Five Days"--complete with the grandest solar eclipse in the history of the world, over Addis Ababa. That's education!

Mount San Antonio College is a community college serving a rapidly increasing population in an industrial, commercial, and residential area. The college offers a diversified program designed to develop qualities essential for citizens in a democratic society: individual responsibility, critical thinking, sensitivity to values, and maturity of intellect and emotion. The development and conduct of campus activities are shaped, therefore, in terms of their value in recognizing and maintaining the dignity of the individual.

Primary emphasis is placed on intellectual achievement. Organized upon this premise, the program embraces social, recreational, and cultural activities. The day, evening, and summer session programs make it possible for a student to (1) prepare for transfer to a four-year college or a university program of study; (2) increase vocational competence culminating in usable and marketable skills and assistance in job placement; (3) remove educational deficiencies; (4) obtain a general education emphasizing basic skills and appreciations; and (5) participate in special programs sponsored in cooperation with governmental and other agencies (as illustrated in the foregoing description of the aviation and aerospace program).

The college, governed by an elected Board of Trustees, is organized and administered according to democratic concepts. The Board of Trustees, the teaching faculty, the administrative faculty, the students, and the general public all have a voice in shaping policies and maintaining an atmosphere conducive to friendliness, sincerity, and unity. Criticism and evaluation are encouraged in furthering the growth and development of the college. This is one reason the Mount San Antonio College aerospace program is most exemplary.

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REEDLEY COLLEGE
Attention: Jack Stevenson, Dean
Technical-Vocational Division
P. O. Box 880
Reedley, California 93654
Telephone: (209) 638-3641

Program Began: 1920's

Current Enrollment: 130 (Day, 80; Evening, 50)

Program includes:

1. FAA-approved mechanic courses, airframe rating
2. FAA-approved mechanic courses, powerplant rating
3. FAA-approved pilot ground school courses

Reports of the aircraft mechanic program at Reedley College indicate that it had its start in the 1920's. At that time, Dale Drake of the Myers-Drake-Offenhauser Engine Company instructed college students in the art of aircraft building and repair. Mr. Drake, of course, held some of the earliest records for long distance gliding flights made from the Reedley area. Since that time, Reedley has shown a commitment to the air age. An A & P program was initiated in 1947, and since that time aviation has continued to grow because it was predicated on sound objectives.

The Reedley College aviation program emphasizes preparation of the vocational mechanic; other courses are added as they become necessary to strengthen the offerings. Training is now sequential in the mechanic courses, with the student spending one school year in powerplant studies and the following year in airframe. Graduation requirements for both the Associate in Science degree and the FAA licenses can generally be completed within two years of college; studies for the private pilot's license as well as further study of helicopter mechanics can also be completed within this period by attending the extended day program.

College-owned equipment consists of several fixed-wing and rotary-wing aircraft which are overhauled and serviced in support of the mechanic curriculum. Additional purchases for further support of this work are made each school year.

Five full-time instructors are employed in the day program. The extended day program uses two instructors to cover the flight and maintenance subjects.

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SAN BERNARDINO VALLEY COLLEGE
REGIONAL TRAINING PROGRAM (Eight high schools)
Attention: W. W. Crandell
701 S. Mount Vernon Ave.
San Bernardino, California 92403
Telephone: (714) 885-0231, Ext. 304

Program Began: 1970

Current Enrollment: 45

The aeronautics course is sponsored by the San Bernardino Valley College for junior and senior high school students attending any area high school. Participating schools are Eisenhower High School, Rialto; Redlands High School, Redlands; Bloomington High School, Bloomington; Colton High School, Colton; Pacific High School, San Bernardino; San Gorgonio High School, San Bernardino; Cajon High School, San Bernardino; and San Bernardino High School, San Bernardino.

Students can receive either high school or college credit for attending the course. Classes meet daily and students attend whichever of the two afternoon sessions their high school schedule permits. In most cases the students provide their own transportation to the college. On Thursday, both classes meet at the Rialto Airport and put into practice some of what they have learned. Each student receives about three hours' flight experience, which includes two lessons at the controls.

The program is a two-semester, survey-type course covering all of the areas normally covered by such a course with emphasis on the career possibilities in each area. Field trips and guest speakers are utilized to the maximum extent possible pointed toward career orientation.

For those students desiring to take the private pilot written examination, a refresher with extra study is offered at the end of the course.

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APPENDIX

Planning, development, and operation of comprehensive aviation education programs that include general (career), vocational, technical, and scientific aspects of modern education is a challenge that many experienced aviation educators will accept with vigor. Some county counsels who are also pilots are now helping school and college districts with the legal aspects of off-campus educational programs for which credit is awarded. Many California school and college aviation educational programs will remain in a state of transition forever and all aviation educators will want a part in the process.

Program planners and teachers are urged to use this status report to facilitate periodic revisions, permit additions as some schools or colleges augment their aviation programs, and eliminate obsolete material. As new ideas emerge, copies of correspondence will be forwarded to you without comment regarding curriculum, operational procedures, sources of assistance, appropriate insurance programs, administrative policies, costs of aviation education operations, contractual agreements, and so forth.

All California aviation educators are urged to communicate with colleagues as a source of assistance and to contact selected members of the Aviation Education Advisors as special problems arise. An exchange of information among schools and colleges with common objectives and open discussions of problems will help to insure more adequate progress in all types of aviation education. A frank discussion of special types of aviation programs offered in each will help to minimize duplication of effort.

Every strong high school and junior college aviation education program raises the quality of all others. We have overcome many of the built-in obstacles, but some will be with us always. By accentuating the positive and using the assistance that is available, we can make even better use of aviation as a motivator of learning at the high school and college level. Those who utilize the Commissioner of Education's 1972 career education concepts will find accountability easily attained--and maybe the "rainbow pot of gold" for education will prove other than illusory sooner than one might think.

The information contained in the Appendix should help to give direction to the development of new programs or help to strengthen existing ones. We solicit your suggestions. Now is the time for graduate students to make studies of aviation career implications for education.

Excerpts from Education Code
State of California, 1969

Article 5.8. Aviation Education
(Article 5.8 added by Stats. 1968, Ch. 182)

Assistance by Department of Education in Development of Program

6001. The Department of Education shall aid and assist local school districts in the development and conduct of a program of aviation education. The Department of Aeronautics may aid and assist in the selection of airports and pilots used by the local districts in flight indoctrination and instruction.

Aims and Purposes of Aviation Education

6002. The governing board of each district is encouraged to develop aims and purposes of aviation education designed to include: (a) integration of appropriate aviation concepts throughout the elementary school, with units of instruction in science, social studies, and arithmetic; (b) aviation experiences in junior high schools in the areas of social studies, science and arithmetic; and (c) elective courses in senior high schools and four-year high schools including air transportation, vocational training, economic, social and political implications of aviation, the science of flight, history of aviation, and flight experience where appropriate airports, planes, and pilots are available and the need for such instruction is indicated. Periodic reports shall be made to the Department of Aeronautics concerning the flight indoctrination and instruction program.

Insurance Program and Supervision for Schools Offering Flight Experience

6003. The Department of Aeronautics is authorized to make available to public schools offering actual flight experience as part of the regular curriculum a basic insurance program and to assure that adequate supervision and precautionary measures are taken by the flight school operators contracted to provide services for public school students. The governing board of any school district offering actual flight experience as part of the regular curriculum may participate in the basic insurance program provided by the commission and pay from the funds of the district a pro rata share of the cost of the insurance program. (The insurance program has not been implemented since code provision was passed in 1968.)

Courses in Aviation Education in Junior Colleges

25519. (Formerly Section 8403) The governing boards of districts maintaining junior colleges are urged to design courses including air transportation, vocational education, career opportunities in civil and military aviation, technical training, flight experience, and ground instruction in localities where the needs of the youth in these communities warrant such a course in these schools.

Aviation Education Survey
Insurance Enrollments and Evaluation
through
FAA Testing and Career Education

On August 1, 1971, a brief survey form was sent to all California high schools engaged in aviation education endeavors. As of January 3, 1972, replies had been received from 95 percent of the 82 schools contacted.

1. The first question asked: "Approximately what proportion of your 1970-71 aviation students took and passed one of the FAA examinations?"

   a. Thirteen reported "none." Many schools still prefer not to admit they are involved in a flight program, or their programs intentionally omit emphasis on aircraft--their design, construction, operation, and utility.

   b. Washington High School in San Francisco reported "100 percent took and passed the FAA examination." In October, 1971, they had 18 students in their aviation program.

   c. Those who answered "25 percent or more" are listed here for reference:

      Culver City H. S., Culver City
      Del Norte H. S., Crescent City
      Elk Grove H. S., Elk Grove
      Lower Lake H. S., Lower Lake
      San Antonio H. S., Claremont
      Tahoe Truckee H. S., Truckee
      Verdugo Hills H. S., Tujunga
      Washington H. S., San Francisco

2. Question 2 asked the high schools which have flight programs and liability insurance coverage to identify the source and the amount of the coverage for the information of other schools. A list of those is provided below.

   None of the flight schools and insurance companies make a noticeable profit out of this service. Since 1946 no school or college has sustained a financial loss because of an accident to aviation education students. Our insurance counselors, flight school offices, and sales and service agencies have been most helpful. Our safety record is unexcelled.

3. To the question about the "overall high school aviation education enrollment," we received a low of zero in 17 schools that had to either abandon the program "temporarily" or offer it one semester only. The largest enrollment was at Compton High School with 180 students. Ten schools reported enrollments of 100 or more aviation students. Five of these were schools with Air Force Junior ROTC programs (a most rapidly expanding educational program of recent years, with high career education potential). Considering the proportion of aviation students to the total school enrollment, Anderson Valley High School in 1971-72 still leads the state, with over 20 percent of its students in aviation courses.

   The total enrollment in California high school aviation education programs was reported at 3,197. From the unsolicited remarks of many administrators, it is evident the aviation and aerospace influence on the curriculum of the schools provided in various areas of the state affects "ten times the actual number of students enrolled in the aviation course, as other students observe the career-and-avocational objectives of friends who are enrolled in the aviation course."

4. The question, "What proportion of your emphasis this year will be devoted to career information?" produced: Only 12.5 percent reported 5 percent or less; 22.5 percent reported 6-15 percent; and 5 percent reported 76-100 percent, with the accent on career awareness at the national level and its relationship to our current effort to comply with the need for accountability. Therefore, we can expect the percent of total time devoted to career information in aviation education courses to increase every day. (The wise teacher maintains contact with some of his graduates who have put their knowledge and skill to work.)

California High Schools Offering Aviation Education Programs for Which Liability Insurance is Provided

School	Agency	Basic Amount of Coverage
Aragon High School Att: Earl Connolley Coord., Aerospace Program 900 Alameda de las Pulgas San Mateo, CA 94402 Tel: (415) 344-1194	Nystrom Aviation Corporation Palo Alto Airport Palo Alto, CA 94303	$ 500,000 to 1,500,000
Del Norte High School Att: George F. Whalen, Prin. Keith Wise, Aero Inst. 1301 El Dorado St. Crescent City, CA 95531 Tel: (707) 464-6141	B. E. Gutmann & Co. 351 California St. San Francisco, CA 94102	500,000 to 1,500,000

School	Agency	Basic Amount of Coverage
Elk Grove High School Att: Howard Winter, Chrmn. Science Dept. & AEI 9800 Elk Grove-Florin Rd. Elk Grove, CA 95624 Tel: (916) 421-5479	Morse Insurance Agency 9045 Elk Grove Blvd. Elk Grove, CA 95624 Tel: (916) 685-3312	$ 100,000 to 300,000
Mendocino County Regional Occupation Center Att: Philip E. Nickerman Dir., Vocational Ed. Ukiah, CA 95482 Tel: (707) 462-1720	J. R. McDonald Co., Inc. Pacific Aviation Managers Att: Dick Gorsuch 3600 Wilshire Blvd. Los Angeles, CA 90010 Tel: (213) 387-2153	100,000 to 300,000
Menlo Atherton High School Att: Mr. Jean L. LaLanne Chairman, Industrial Arts Atherton, CA 94025 Tel: (415) 369-1412	Skyway Aviation Att: Edwin Kerner 795 Skyway San Carlos, CA 94470 Tel: (415) 593-1448	100,000 to 500,000
Ravenswood High School Att: Mrs. Joan Doyle Aeronautics Instr. 2050 Cooley Ave. East Palo Alto, CA 94304 Tel: (415) 369-1412	Skyway Aviation (See above) Jim Duncan's School of Flying Palo Alto Airport East Palo Alto, CA 94304 Tel: (415) 323-2422	100,000 to 500,000
San Antonio High School Att: Norman Taylor, Prin. Donald Patterson Aviation Instr. 545 Colby Cir. Claremont, CA 91711 Tel: (714) 624-9041	Klopfenstein & Smeltzer P. O. Box 2306 Pomona, CA 91766 Tel: (714) 629-2591	100,000 to 1,000,000
Seaside High School Att: Robert DeWeese Asst. Prin.-Curr. Warren Hintz Aviation Instr. P. O. Box 1031 Monterey, CA 93940 Tel: (408) 649-7011	G. D. Thorn & Company P. O. Box 470 Monterey, CA 93940 Tel: (408) 375-2631	500,000 to 2,000,000

* * * * * * *

SOURCES OF AVIATION EDUCATION ASSISTANCE

The sources of assistance for aviation and aerospace education in the State Department of Education are increasing rapidly with the introduction of federal programs and the growing recognition of the importance of a well-rounded aviation program for both general and vocational purposes. There are many sources of information and direct assistance that should be used by schools and colleges establishing new or strengthening existing aviation education programs. If you know of others that we have overlooked, we would appreciate hearing from you.

California State Department of Education Sources

1. Supt. of Public Instruction
721 Capitol Mall
Sacramento, CA 95814
Tel: (916) 445-4338

2. Asst. Supt. of Public Instruction
217 West 1st St.
Los Angeles, CA 90012
Tel: (213) 620-3430

3. Bureau of Industrial Education

Karl F. Jacobson, Supervisor
Central Regional Office
1919 - 21st St.
Sacramento, CA 95814
Tel: (916) 445-9570

Richard Williams, Supervisor
Coastal Regional Office
1111 Jackson St., Rm. 4064
Oakland, CA 94607
Tel: (415) 834-3460, ext 425

Robert Tobi, Supervisor
Elmer Wirta, Coordinator
Southern Regional Office
217 West 1st St.
Los Angeles, CA 90012
Tel: (213) 620-3424

Paul G. Sciranka, Supervisor
Trade & Technical Teacher Educ.
University of California
2941 Telegraph Ave.
Berkeley, CA 94705
Tel: (415) 642-7080

Dick Lano, Supervisor
Trade & Technical Teacher Educ.
123 Moore Hall
UCLA
Los Angeles, CA 90024
Tel: (213) 825-4581

4. California Community Colleges
Robert Gordon

Dean of Vocational Education
825 - 15th St.
Sacramento, CA 95814
Tel: (916) 445-7911

5. Bureau of School Approvals

Herbert E. Summers, Chief
721 Capitol Mall
Sacramento, CA 95814
Tel: (916) 445-3427

T. A. Duffy, Supervising Field Representative
217 West 1st St., Rm. 804
Los Angeles, CA 90012
Tel: (213) 620-4256

6. Manpower Development & Training Program
722 Capitol Mall
Sacramento, CA 95814
Tel: (916) 445-4740

7. Surplus Property Educational Agency

721 Capitol Mall
Sacramento, CA 95814
Tel: (916) 445-4943

4701 Eastern Ave., Bldg. 412
Los Angeles, CA 90201
Tel: (203) 263-6776

540 Van Ness Ave.
San Francisco, CA 94103
Tel: (415) 557-0482

2500 Teagarden St.
San Leandro, CA 94577
Tel: (415) 357-2400

Other sources of assistance for aviation and aerospace education in the schools and colleges of California include:

Federal Aviation Administration Offices

1. Aviation Education Consultant
Public Affairs Office
FAA-Regional Office
P. O. Box 92007, Airport Station
Los Angeles, CA 90009
Tel: (213) 670-7030, Ext 206

2. Chief, Flight Standards Branch
FAA-San Francisco Area Office
631 Mitten Rd.
Burlingame, CA 94010
Tel: (415) 692-2441

3. Supervising Inspector
FAA-General Aviation District Office
Government Agency Bldg.
Fresno Air Terminal
Fresno, CA 93724
Tel: (209) 251-6056

4. Supervising Inspector
FAA-General Aviation District Office
2815 E. Spring St.
Los Angeles, CA 90806
Tel: (213) 426-7134

5. Supervising Inspector
FAA-General Aviation District Office
Administration Bldg. Annex
International Airport
Ontario, CA 91761
Tel: (714) 984-2411

6. Supervising Inspector
FAA-General Aviation District Office
Oakland Airport
Oakland, CA 94614
Tel: (415) 569-8879

7. Supervising Inspector
FAA-General Aviation District Office
Executive Airport
Sacramento, CA 95822
Tel: (916) 449-3169

8. Supervising Inspector
FAA-General Aviation District Office
Lindberg Field
San Diego, CA 92101
Tel: (714) 293-5280

9. Supervising Inspector
FAA-General Aviation District Office
Municipal Airport
3200 Airport Ave.
Santa Monica, CA 90406
Tel: (213) 393-6701

10. Supervising Inspector
FAA-General Aviation District Office
Van Nuys Airport
16700 Roscoe Blvd.
Van Nuys, CA 91406
Tel: (213) 785-8624

11. FAA Aeronautical Center
Operations Branch AC-740
P. O. Box 25082
Oklahoma City, OK 73125
Tel: (405) 686-4521

12. Mervin K. Strickler, Jr.
Special Asst. for Aviation Educ.
FAA-Aviation Education Division
GA-20, Room 1021A
Washington, D. C. 20553
Tel: (202) 962-5333

U. S. Department of Commerce

Coast and Geodetic Survey
Environmental Services Admin.
U. S. Department of Commerce
Washington, D. C. 20235

Public and Private Colleges

1. Northrup Institute of Technology
1155 W. Arbor Vitae St.
Inglewood, CA 90306
Tel: (213) 641-3470

2. Aeronautics Department
San Jose State College
San Jose, CA 95114
Tel: (408) 294-6414, ext 2481

3. Aerospace Education Program
Div. of Applied Arts & Sciences
Calif. State College at Long Beach
Long Beach, CA 90804
Tel: (213) 433-0951, ext 305

Aircraft Manufacturers

(Address requests for information to:
Aviation Education Consultant-Public Affairs Office)

1. Beech Aircraft Corporation
Wichita, KS 67201

2. The Boeing Company
P. O. Box 3707
Seattle, WA 98124

3. Frank G. Mitchell
Cessna Aircraft Company
P. O. Box 1521
Wichita, KS 67201

4. Hughes Aircraft Company
Centralia and Teale Sts.
Culver City, CA
Tel: (213) 391-4711

5. Lockheed Aircraft Corporation
2555 N. Hollywood Way
Burbank, CA 91503

6. North American Aviation, Inc.
1700 E. Imperial Highway
El Segundo, CA 90246

7. Education Department
Pan American Airways, Inc.
Pan Am Bldg.
New York, NY 10017

8. Piper Aircraft Corporation
Lock Haven, PA 17745

Producers and Distributors of Aviation Education Instructional Materials and Equipment

1. Above and Beyond Encyclopedia
Times Mirror School Library
Service, Inc.
211 Avenue San Pablo
San Clemente, CA 92672

2. Aeroproducts Research
11201 Hindry Ave.
Los Angeles, CA 90005
Tel: (213) 641-7242

3. Mr. Ernest J. Gentle
Aero Publishers, Inc.
329 Aviation Rd.
Fallbrook, CA 92028

4. Airflite, Inc.
P. O. Box 1769
Long Beach, CA (213) 636-0286

5. Aviation Book Company
565½ W. Glenoaks Blvd.
Glendale, CA 91212

6. California Council of Aviation
Associations
P. O. Box 60591
Terminal Annex
Los Angeles, CA 90060

7. General Aviation Mfg. Association
Suite 1200-A
1025 Connecticut Ave. N. W.
Washington, D. C. 20036

8. General Precision Systems, Inc.
Link Group
Binghampton, NY 13902

9. Jeppeson and Company
8025 E. 40th Ave.
Denver, CO 80207

10. Don L. Myers Company
Palo Alto Airport
Palo Alto, CA 94302

11. Nat'l Aeronautics and Space
Admin. Educational Officer
Ames Research Center
Moffett Field, CA 94035
Tel: (415) 961-1111, ext 2785

12. Nat'l Aerospace Educ. Council
806 - 15th St., N. W.
Washington, DC 20005

13. Sanderson Times Mirror
8065 E. 40th Ave.
Denver, CO 80207
Tel: (303) 399-7250

Other Sources

1. Air Transport Association of America
   1000 Connectict Ave., N. W.
   Washington, DC 20005

2. Academy of Model Aeronautics
   1239 Vermont Ave., N. W.
   Washington, DC 20005

3. Aerospace Industries Association of America
   6151 W. Century Blvd., Suite 021
   Los Angeles, CA 90045
   Tel: (213) 670-4875 and
   (213) 776-5850

4. American Education Publications
   55 High St.
   Middletown, CT 06458

5. California Aerospace Education Association
   Aeronautics Department
   San Jose State College
   San Jose, CA 95114

6. Civil Air Patrol

   National Headquarters
   Maxwell Air Force Base, AL 36112

   L. D. "Pat" Cody
   Director, Aerospace Education
   Pacific Regional Off., Bldg.S-190
   Hamilton AFB, CA 94935
   Tel: (415) 883-7711, ext 3021

7. Gold Seal Training Programs
   6000 Douglas Dr. North
   Minneapolis, MN 55429
   Tel: (612) 533-2214

8. Pacific Airmotive Corporation
   Aviation Products Division
   12011 Sherman Rd.
   North Hollywood, CA 91605
   Tel: (213) 842-5171

9. U. S. Government Printing Office
   Division of Public Documents
   Washington, D. C. 20402

10. Van Dusen Aircraft Supplies
    496 S. Airport Blvd.
    South San Francisco, CA 94080
    Tel: (415) 589-3133

Special Information

For local assistance with your administration, school board or operational problems, contact: Harry Noblitt, Airflite, Inc., Box 1769, Long Beach, Ca 90801

For information about Rocketry Education, contact: (1) Robert Cannon, Estes Industries, Inc., Box 227, Penrose, CO 81240; (2) George James, Rocket Safety Registration Program, Rocket Research Institute, P. O. Box 1252, Sacramento, CA 95806.

For information about the Junior Air Force ROTC Program of Aerospace Education in the High Schools of the United States, contact: Department of the Air Force, Air Force Reserve Officer Training Corps, (AU) Maxwell AFB, AL 36112.

Periodicals:

Air Facts, Inc., 70 Nassau St., Princeton, NJ 08540
Air Progress, Box 1711, Des Moines, IA 50306
Air Line Pilot, 1328 "E" St., N. W., Washington, DC 20004; Tel: (202) 347-2211
Air Ways, P. O. Box 1136, Santa Monica, CA 90406
American Aircraft Modeler Magazine, 733 - 15th St., N.W., Washington, DC 20005
Aviation News, Federal Aviation Administration, Superintendent of Public Documents, U. S. Government Printing Office, Washington, DC 20402
Aviation Week and Space Technology, McGraw-Hill, 330 West 42nd St., New York, NY 10036
Flying, Ziff-Davis Publishing Company, One Park Ave., New York, NY 10016
General Aviation News, P. O. Box 3397, Van Nuys, CA 91407
Pilot (restricted to AOPA members, aeronautics teachers, and libraries), P. O. Box 5800, Washington, DC 20014
Shell Aviation News, Public Relations Dept., Shell Oil Company, 50 West 50th St., New York, NY 10020

Additional Current Resources

The Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402, can provide, at a cost of $2.25, the Aeronautical Science Course of Study (October, 1969). This text was produced cooperatively by the Redondo High School of the South Bay Union High School District and the California State Department of Education. It suggests the content of a high school aeronautical program and includes a commendation from Congressman Don H. Clausen of California, a proclamation made by Governor Ronald Reagan, goals and objectives of a task force on aerospace-aviation education, and 230 pages of proposed course content and text materials. Any teacher contemplating the development of a new course or improvement of an existing one would do well to study the contents of Aeronautical Science Course of Study.

This Aeronautical Science Course of Study, in addition, may be obtained from the National Aerospace Education Council, 805 15th St., N. W., Washington, DC 20005. Available also from NAEC are the monthly newsletter, Skylights, and periodical packets of significant aerospace education material.

Administrators and teachers desirous of obtaining additional information about flying activities--what they consist of, why students are given an opportunity to make actual orientation flights, the school's liability, and materials needed for such a course--would do well to address correspondence to Sanderson Films, Inc., 8065 E. 40th Ave., Denver, CO 80207, Tel: (303) 399-7250. Sanderson also offers a consultant service for educators in order to implement their philosophy that the "educational benefits to be derived from the infusion of aviation and aerospace concepts into the traditional subjects at the elementary school level and the inauguration of aviation and aerospace courses at the high school and college levels offer unlimited advantages in preparing young people for happier, more successful, and more productive lives in the air and space age.

Aeroscience is a 1970, 813-page aeroscience textbook which is a result of the inspiration of Redondo High School students and their teacher, Ted Misenhimer. It is especially valuable for information it contains about employment opportunities in the aerospace field. It is published by Aero Products Research, Inc., 11811 Teale St., Culver City, CA 90230, Tel: (213) 391-6303.

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